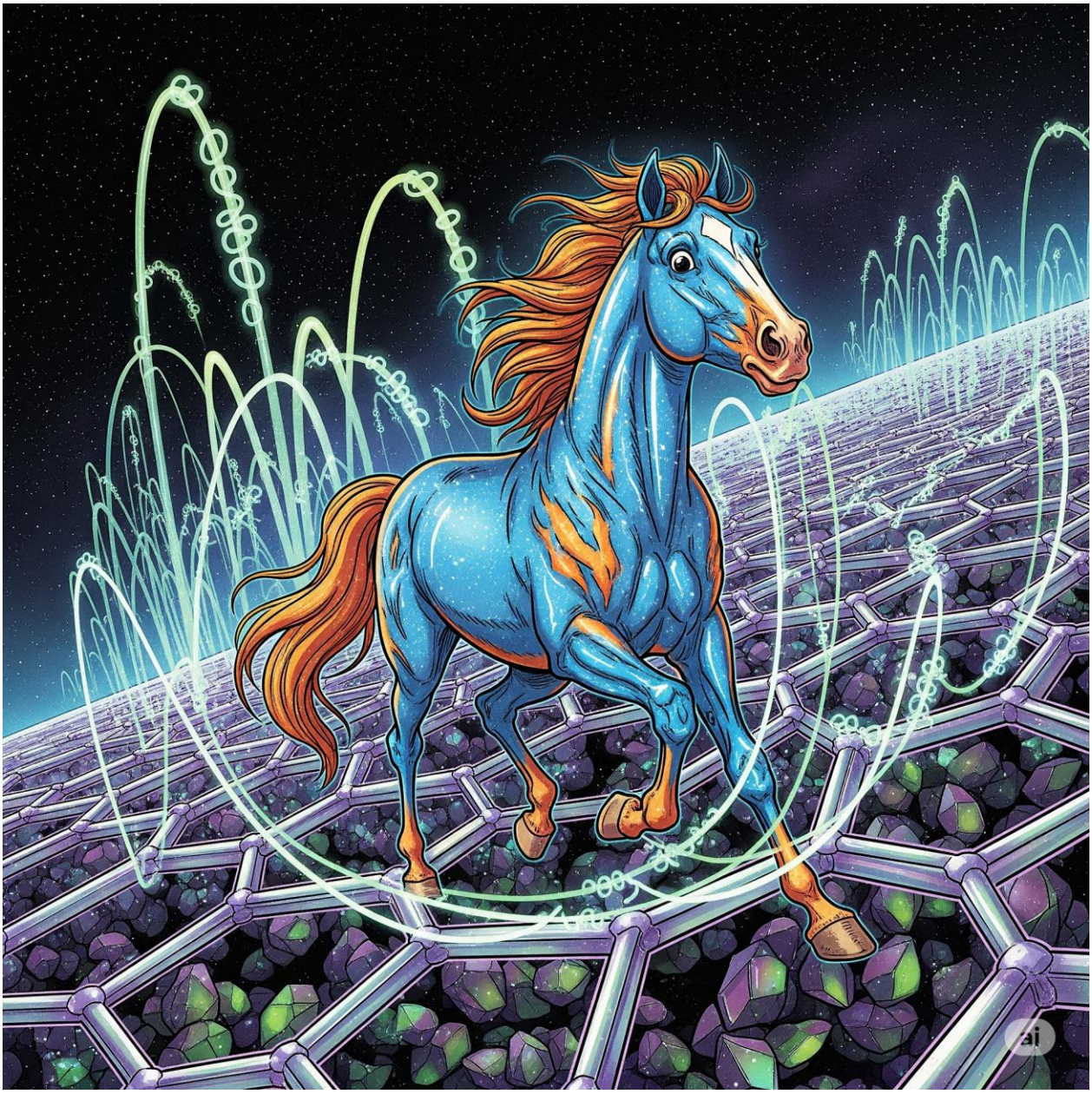
Department of Physics



Academic Year 2025-2026

Graduate Handbook

UNIVERSITY OF TEXAS ARLINGTON

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IMPORTANT CONTACTS

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Official University Academic Calendar 2024-2025

For the most current information go to https://www.uta.edu/uta/acadcal.php?session=20197

Graduating students should see the final semester checklist. The Graduate School may change this calendar if conditions warrant. Note: Some graduate programs may have earlier application deadlines, please check with your specific program for exact dates.

Important Date	Fall Semester	Spring Semester	Summer
International Student and Legal Permanent Resident Application and Readmission Deadline	April 1	September 15	February 1
U.S. Student Application Deadline and Readmission Deadline	June 15	October 15	April 1
Registration Begins	April 7	November 3	April 6
First Day of Classes	August 17	January 12	1st 5-wk, 11-wk: June 1, 2nd 5-wk: July 6
Late Registration	August 18-22	January 12-16	1st 5-wk, 11-wk: June 1-2, 2nd 5-wk: July 6-7
Census Date	September 3	January 28	1st 5-wk: June 4,11-wk: June 18, 2nd 5-wk: July 9
Deadline for Graduation: Last Date to File Application for Graduation	October 1	March 2	July 1
Last Date to Drop or Withdraw	October 31	April 3	1st 5-wk: June 22, 11-wk: July 15, 2nd 5-wk: July 27
Final Date to Hold Master's Exam/Dissertation Defense	December 15	TBD	TBD
Final Date to Submit Approved Thesis/Dissertation to Graduate School and Submit Report of Final Master's Examination/Dissertation Defense	December 15	TBD	TBD

Final Exams	December 4-9	May 1-6	1st 5-wk: July 1, 11-wk: Aug 6-7, 2nd 5-wk: Aug 7
Graduation Exercises	December 12	May 8	

To see the Graduate School deadlines visit the Office of Records and Registration website at http://www.uta.edu/records/graduation/deadlines.php

UTA Holidays

The list of UTA University Holidays for the current academic year can be found here: https://www.uta.edu/hr/holidays

September 1, 2025 - Labor Day

November 27, 2025 - Thanksgiving Holiday

November 28, 2025 - Thanksgiving Holiday

December 24, 2025 - Winter Break

December 25, 2025 - Winter Break

December 26, 2025 - Winter Break

December 29, 2025 - Winter Break

December 30, 2025 - Winter Break

December 31, 2025 - Winter Break

January 1, 2026 - Winter Break

January 19, 2026 - Martin Luther King Jr. Day

***Spring Break Friday**

May 25, 2026 - Memorial Day

June 19, 2026 - Juneteenth

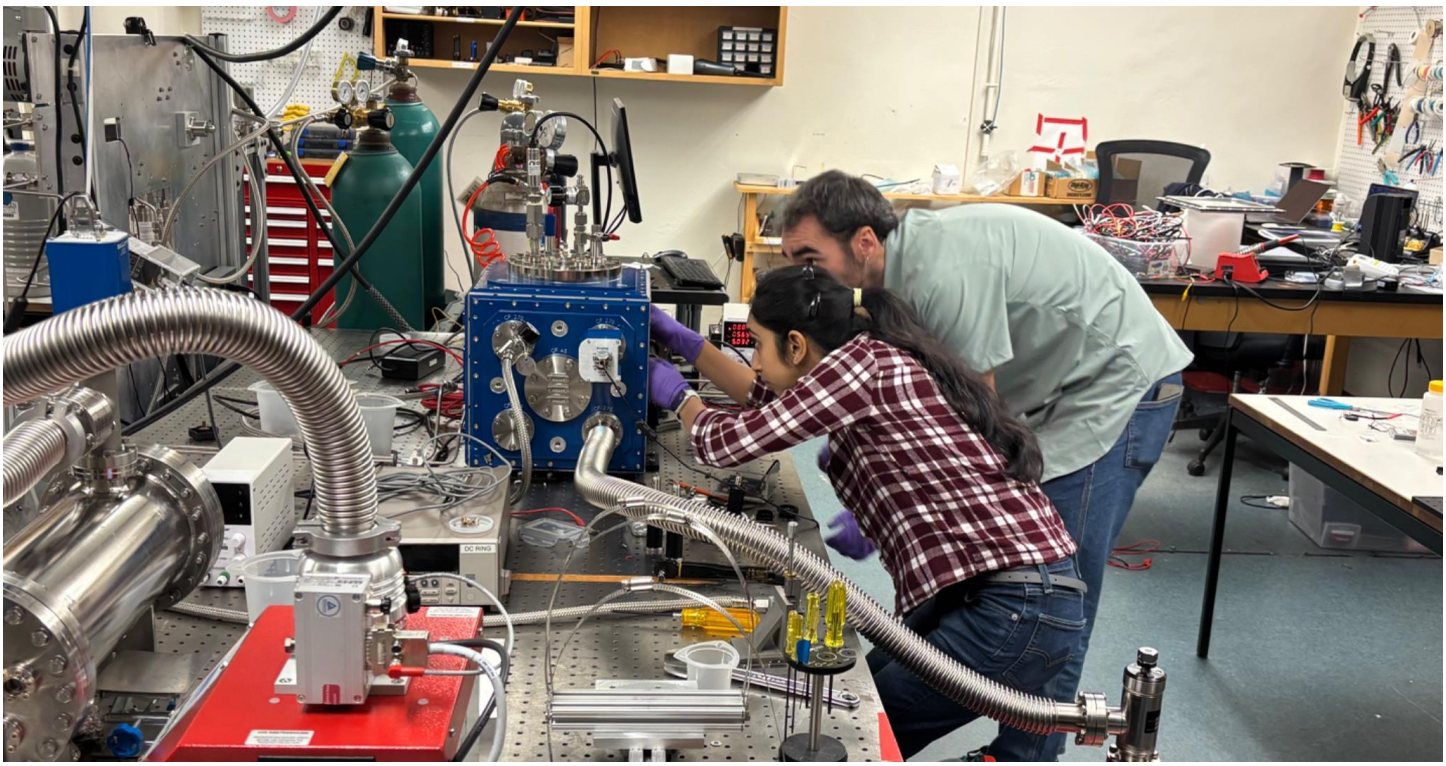
July 3, 2026 - Independence Day

***The Friday of Spring Break as defined in the Academic Calendar**

Physics Graduate Program Mission Statement

The objective of graduate work in physics is to prepare the student for continued professional and scholarly development as a physicist. The Physics Master of Science Degree Programs are designed to give the student advanced training in all fundamental areas of physics through formal courses and the options of some degree of specialization or participation in original research in one of a variety of projects directed by the faculty. The Doctor of Philosophy in Physics and Applied Physics Program combines the traditional elements of a science doctoral program with courses in specifically applied topics and internship in a technological environment. It is designed to produce highly trained professionals with a broad perspective of the subject which may prepare them equally well for careers in academic or in government or industrial laboratories. Current research in the department is conducted in the areas of condensed matter physics and materials science, nano-bio physics, astrophysics and space physics, high-energy physics, optics, and Physics education.

The PhD Program



Overview

A physics PhD is a research-based qualification that certifies that the recipient has obtained a level of understanding of physics concepts at a doctoral level, and contributed a body of original research to their field of study.

Obtaining a PhD requires:

1. Completion of 30 course hours of academic courses, including the core requirements expected in the area of specialization;
2. Passing a series of examinations, including the diagnostic ("qual") exam *[~first year]*, and comprehensive exam *[~third year]*;
3. Conducting original scholarly research that produces novel and publishable results in the field of study;
4. Writing a dissertation that summarizes these research contributions;
5. Defending that dissertation in front of a committee of experts.

The following sections outline in detail the requirements associated with each of these items.

PhD Requirements

General Requirements

Degree Requirements and Academic Performance Standards

The Doctor of Philosophy (Ph.D.) is the highest degree offered by The University of Texas at Arlington. The degree is awarded only for academic work of distinction through which the student demonstrates superior scholarship and capacity for original work. Requirements for the doctoral degree listed below are the minimum required by the Graduate School. Meeting all of these requirements does not result automatically in the awarding of the doctoral degree. All departments and programs have additional requirements for a high level of scholarly achievement that must be met by successful doctoral candidates. In all doctoral programs, the basic requirements are that a student 1) attain mastery of a field of knowledge as determined by the appropriate Committee on Graduate Studies and demonstrated in a general examination; and 2) present evidence of a capacity to complete a significant program of original research by preparation of a dissertation.

To be admitted to a doctoral program, an applicant must have completed a master's degree or at least 30 semester credit hours of graduate coursework.

Time Limit

All requirements for the doctoral degree should be completed within four years after the student unconditionally passes the comprehensive examination.

Grades

To graduate with any post-baccalaureate degree at UTA, a student must have a minimum grade-point average of 3.0 with no more than one C in the list of Physics courses given in the students' final program of work.

Courses

Course Requirements

The Physics Department requires a minimum of 30 hours of organized/ graded courses and nine hours of dissertation.

Each student will declare an area of specialization within their first two years. Each specialization has a distinct set of required courses. The required courses for each area are as follows:

Astrophysics	
Course	**Number of Credits**
E&M I	3
E&M II	3
QM I	3
Stat Mech	3
Classical Mech	3
Math Methods I	3
Math Methods II	3
Math Methods III	3
Subtotal:	*24*
Elective I	3
Elective II	3
Total:	**30**

Particle Physics	
Course	**Number of Credits**
E&M I	3
QM I	3
QM II	3
Stat Mech	3
Math Methods I	3
Math Methods II	3
Particle Physics I	3
Particle Physics II	3
Detectors / Electronics / AI/ML	3
Subtotal:	*27*
Elective I	3
Total:	**30**

Medical Physics	
Course	**Number of Credits**
E&M I	3
E&M II	3
QM I	3
Stat Mech	3
Math Methods I	3
Math Methods II	3
Medical Physics I	3
Medical Physics II	3
Subtotal:	*24*
Elective I	3
Elective II	3
Total:	**30**

Condensed Matter	
Course	**Number of Credits**
E&M I	3
E&M II	3
QM I	3
QM II	3
Stat Mech	3
Math Methods I	3
Math Methods II	3
Classical Mech	3
Subtotal:	*24*
Elective I	3
Elective II	3
Total:	**30**

Space Physics	
Course	**Number of Credits**
E&M I	3
E&M II	3
QM I	3
Stat Mech	3
Classical Mech	3
Math Methods I	3
Math Methods II	3
Space Physics I	3
Space Physics II	3
Subtotal:	*27*
Elective I	3
Total:	**30**

Core Common Courses	
Course	**Number of Credits**
E&M I	3
QM I	3
Stat Mech	3
Math Methods I	3
Math Methods II	3
Total:	15

The remaining courses required to make up 30 hours can be selective from electives offered either by the physics department, or by other departments within either the College of Science or College of Engineering. Permission to substitute a non-physics course for an elective must be obtained from the graduate advisor before registering for the course.

Students changing their area of specialization should take any missing courses prior to graduation, which may result in taking a total of more than 30 course hours.

Registration in Doctoral Courses

Following completion of the required academic courses, students are expected to register in research or dissertation courses, maintaining a total of 9 credit hours in each normal semester. The following rules apply to all doctoral courses (both academic and research-based):

1. Registration in an individual study, research or similar course implies an expected level of effort on the part of the student that is at least equivalent to that of an organized course of the same credit value.

2. Doctoral students shall not be required to register for more than nine credit hours during any long semester or summer, except that:

    a. Doctoral students who are enrolled in nine credit hours of organized courses and are also doing research related to their dissertation may be required to register for up to three hours of research for a total of 12 credit hours.

    b. Doctoral students supported as graduate research or teaching assistants may be required to register for 12 credit hours (no more than nine credit hours to be in organized courses), as determined by the students' graduate program.

3. Doctoral students who are required to register solely to satisfy a continuous enrollment requirement shall register for no more than three credit hours during each term.

4. Doctoral students may not register for more than 12 semester hours in a semester or summer session unless such registration is approved in advance by the Program of Graduate Studies.

Examinations

Diagnostic Evaluation ("Qual Exam")

During the student's first year of doctoral or Ph.D. bound program work, they must demonstrate basic competency in four core areas of undergraduate-level physics: electricity and magnetism, classical mechanics, quantum mechanics and statistical mechanics. The method of assessing this competency consists in evaluation via four undergraduate-level diagnostic examinations (sometimes colloquially referred to as "qual exams").

The diagnostic evaluation in each subject is administered during the first year of PhD, in the same semester as the relevant first-year graduate course. The first attempt at the exam is administered before the beginning of the course. Students who fail this attempt may make a second attempt at the end of the semester. The passing grade for both first and second tries is 36/60. Studying for the first exam is intended to help consolidate the basic undergraduate-level understanding that is prerequisite for graduate-level courses.

An oral exam may be given to the students who fail to unconditionally pass the written exam on an individual subject in their second trial, but obtain a suitably high score to warrant an oral exam. The threshold for this eligibility is typically 30/60. The Graduate Studies Committee reserves the right to curve the passing and oral exam thresholds in the generous-leaning direction.

Students who demonstrate major deficiencies in understanding during the first exam attempt may be advised to consider taking the undergraduate-level courses before proceeding to graduate-level course. This decision is at the discretion of the student, and should be made in consultation with the graduate advisor.

The Diagnostic Evaluation Report must be filed in the Graduate School by the student's Graduate Advisor. The student must pass all four qual exams before being eligible to proceed to PhD candidacy.

To prepare for the qualifying exam, it is recommended that students work through as many undergraduate-level problems as possible.

Relevant textbooks at the appropriate level include

- *Classical Dynamics of Particles and Systems* by Stephen Thornton and Jerry Marion; *Classical Mechanics* by Herbert Goldstein, Charles Poole, and John Safko (only the first two chapters).
- *Introduction to Electrodynamics* by David J. Griffiths. (4th ed.)
- *Introduction to Quantum Mechanics* by David J. Griffiths (2nd ed.).
- *Thermodynamics and Statistical Mechanics* by Walter Greiner, Ludwig Neise, and Horst Stöcker

Several sample qual exams are provided at this web page:
https://www.uta.edu/academics/schools-colleges/science/departments/physics/degree-programs/graduate/graduate-qualifier-sample-problems

Another useful repository of qual exam problems can be found here:
https://physrefs.mit.edu/general-exam-preparation/

Comprehensive Examination

The physics graduate comprehensive exam is a two-hour oral examination that is held after completion of graduate classes and at least one year before the dissertation defense. It is recommended that most students take the exam during their third year. If a candidate fails the exam, they must retake the exam within one semester and can expect their defense to be delayed so that it will follow in no less that one year's time. The comprehensive exam includes a public portion that should be announced publicly to the Physics department with a title and abstract no less than 36 hours prior to the event.

Students should prepare a 45-minute presentation, with a recommended balance of 1/3 scientific background and methodology, 1/3 research progress to date, and 1/3 plans for PhD project. The target audience is the doctoral committee, and the level of material should be chosen appropriately. The committee may interrupt with questions, and in practice the presentation can take much longer than the prepared time.

A period of audience Q&A follows, after which the audience will leave for a closed session with the candidate by the committee. After the committee has exhausted their questions, the student will exit while the committee deliberates. In most cases the student will be informed of the result and any committee recommendations shortly after the end of the exam.

The criteria used to determine whether a student has passed the exam are:

1. A suitable PhD dissertation project has been identified.
2. The goals of the research project are well defined.
3. The results of the work will be novel and contribute new knowledge to the research area.
4. The work is achievable on a suitable timescale and with available resources.
5. Preliminary studies are under way and early results show promise.

6. Work to date displays basic competence as a researcher, including (but not limited to) understanding the limitations of their methodology and identifying alternative methodologies should they be presented with an insurmountable obstacle.
7. Prior relevant work by others has been reviewed and presented.
8. An understanding of relevance of the work in the context of the field is conveyed.

In addition to a decision, the committee may also provide recommendations on aspects of professional and academic development including but not limited to: publications, collaborative work, career guidance, breadth of research skills, pursuit of professional opportunities, etc.

Students should think of the comprehensive exam not as a test of physics knowledge, but as a research proposal. The primary goal is to convince the committee that the chosen project is suitable for a PhD dissertation and that the student is equipped to pursue it to a satisfactory conclusion.

The comprehensive examination may result in: 1) unconditional pass and recommendation to proceed to the next phase of the program; 2) approval to remain in the program but a requirement to meet certain specified additional criteria; 3) failure, but with permission to retake the examination after a period specified by the examining committee; or 4) failure with recommendation not to continue in the program.

Students are eligible to take the Comprehensive Examination after giving evidence to their doctoral committees of adequate academic achievement by having completed all or most coursework requirements. The comprehensive examination usually marks the end of formal coursework and the beginning of concentrated work on dissertation research and preparation. The student must be enrolled in the Graduate School in the semester in which he/she takes the comprehensive examination. Upon receiving an unconditional pass on the Comprehensive Examination, the student becomes eligible for application for PhD candidacy.

Thesis Committee

The comprehensive examination and dissertation defense are administered by a committee of five members, called the “thesis committee”. This committee includes the PhD advisor and at least four others who are selected in discussion between the student and PhD advisor. Four of five members should be active in the students major area of research, and four of five (not necessarily the same four) should be drawn from UTA’s graduate faculty. One qualified external person who is not a member of the graduate faculty may serve as a voting member, following a request accompanied by documentation, such as a vita, to the graduate advisor. The committee is responsible for design and direction of the student's program and assessing the students success at their chosen research.

In interdisciplinary programs, at least two members must represent each field concerned, but in no case will the committee consist of fewer than five members. After the student has passed the comprehensive examination, the doctoral supervising committee may be altered or expanded to accommodate the dissertation research needs of the student, but the committee must continue to include at least five voting members.

Dissertation and Defense

One of the most substantial deliverables a student must produce in order to earn a PhD is a dissertation. The dissertation is a self-contained document that should include introductory material that is understandable to a PhD-qualified physicist followed by a detailed explanation of the students original contributions and their results. A dissertation must contain publication-quality, original work that represents a novel contribution to the major field of study. The dissertation will be read by the students thesis committee, who will ask the student to defend it in a public oral examination.

Dissertation Manuscript Preparation

Students pursuing a Ph.D. must have the format of the dissertation manuscript approved by the U.T. Arlington Graduate School before the degree can be conferred. Manuals for conforming to UTA style can be found here:
https://resources.uta.edu/gradschool/advisors/thesis-and-dissertation-forms.php
https://libraries.uta.edu/services/thesis-dissertation

The Graduate School specifically checks the document for conformity to U.T. Arlington formatting requirements. Details regarding U.T. Arlington's dissertation formatting requirements are available online through the Virtual Graduate School Advisor. The Graduate School offers all doctoral students the opportunity to attend Thesis and Dissertation Seminars each semester. These seminars provide attendees with detailed explanations of the style guides and hands-on experience with the RAFT Template. In addition, all graduation procedures and requirements are covered in the seminars. Reservations are required and can be made online through the Virtual Graduate School Advisor.

The format of all dissertations must be reviewed and approved by the Graduate School before the dissertation will be accepted as satisfying the dissertation requirement of the Doctoral degree. Students may submit dissertations to the Graduate School for checking as an electronic file using the electronic thesis and dissertation submission process or as hard-copy.

Final copies and submission

Once the Thesis and Dissertation specialist has approved the dissertation and the student has unconditionally passed the dissertation defense, the student may submit the final copy of the dissertation to the Graduate School for approval by the Program of Graduate Studies. Students submitting electronically need only submit one copy through the electronic thesis and dissertation process. All dissertations must be submitted by the deadline for final three submission and must be prepared according to regulations described in the current edition of *The UTA Thesis and Dissertation Guide: Requirements, Style, and RAFT Template* available online through the Virtual Graduate School Advisor and Turabian's *A Manual for Writers of Term Papers, Theses, and Dissertations* (6th ed.). All dissertation students must also submit the UMI microfilm agreement, Thesis and Dissertation Data Sheet, and the Intellectual Property Statement. These forms are available online through the Virtual Graduate School Advisor.

The final copy or copies of the dissertation are University property and a student may make no private agreements with employers, funding sources, or others that restrict or infringe upon University rights. Copyrights, where applicable, are held by the student author. Dissertation fees are explained in the Tuition and Fees section of the Graduate Catalog.

Dissertation defense

The dissertation defense is a public oral examination open to all members (faculty, students and invited guests) of the University community. Questioning of the candidate will be directed by the student's dissertation supervising committee. All members of the student's committee must be present at the defense, though external members may in some circumstances be permitted to attend via Zoom / Teams. Although the defense is concerned primarily with the dissertation research and its interpretation, the examining committee may explore the student's knowledge of areas relevant to the core of the dissertation problem.

The dissertation defense may result in a decision that the candidate has 1) passed unconditionally; 2) passed conditionally with remedial work specified by the committee; 3) failed, with permission to be re-examined after a specified period; or 4) failed and dismissed from the program. The dissertation must be approved unanimously by the student's dissertation supervising committee and by the Program of Graduate Studies.

Regardless of the outcome of the defense, the Dissertation Defense Report must be submitted to the Program of Graduate Studies within five working days after the examination. When a scheduled defense is postponed or canceled, the Program of Graduate Studies must receive written notice of this postponement or cancellation and a new application for the dissertation defense must be filed in the Graduate School in accordance with the Graduate School requirements specified above.

The final approved electronic copy or the final three approved unbound paper copies of the approved dissertation must be submitted to the Program of Graduate Studies by the date specified in the Graduate School Calendar. When the final copy or copies are deposited with the Graduate School, the student will be billed for the required fees.

Application for dissertation defense

An application for the dissertation defense must be filed in the Graduate School by the student no later than three weeks before the final date for submission of approved dissertations and dissertation defense reports and at least two weeks before the scheduled defense. The dissertation supervising committee must have copies of the dissertation at least two weeks prior to the dissertation defense. The defense should be announced publicly to the Physics department with a title and abstract no less than 36 hours before the event.

Dissertation course

A doctoral candidate/student must be enrolled in a three-semester hour dissertation course (7399 cannot be repeated) or a six-semester dissertation course (6699 can be repeated) in the semester in which the dissertation is defended. The dissertation represents the culmination of the student's academic efforts and so is expected to demonstrate original and independent research activity and be a significant contribution to knowledge.

Once the student is enrolled in the dissertation course, continuous enrollment is required. A student receiving advice and assistance from a faculty member in the preparation of a dissertation must register for the appropriate course even if the student is not on campus.

Financial Support

Financial support is available to qualifying students in the form of Graduate Teaching Assistantships (GTA), Graduate Research Assistantships (GRA), Fellowships, scholarships or a combination. Most students in their first and second years serve as Teaching Assistants. This requires about 20 hours per week of teaching undergraduate laboratories or assisting faculty with class preparations and grading. Beyond the first one or two years, students are encouraged to find support as Research Assistants with faculty in their area of interest.

Masters and doctoral students can be nominated by their Graduate Advisor for annual fellowships. Students from out-of-state who receive fellowships will have their tuition reduced to in-state rates, providing a significant reduction in tuition costs. You should discuss the nomination procedure for these fellowships with your Graduate Advisor.

Students may be funded by the department for up to two full years for an M.S. or up to three full years for a Doctoral degree (including any support during an M.S.) Further funding may be obtained from the thesis/dissertation supervisor. According to University regulations, a student must be unconditionally admitted or, if continuing, in good standing (not on academic probation) to receive either a teaching or a research assistantship. In exceptional circumstances, a student not in good standing may petition the Physics Department Graduate Studies Committee and the graduate School for continued support. Students receiving GTA's or GRA's from the Physics Department will be expected to complete a graduate degree program in Physics before they transfer to a program in another department at the University.

Select students are eligible to participate in the STEM or DDA fellowship programs, designed for doctoral degree seeking students, which will afford them significantly, reduced tuition and fees. To be eligible, the student must be a Ph.D. bound or Ph.D. level Graduate Research or Teaching Assistant employed 20 hours per week at the university (in the College of Science) and enrolled full time (9hrs in a long semester and 6hrs in the summer) with a minimum GPA 3.0. The STEM and COSA fellowships may be held for a maximum period of three years for a student started from Ph.D. program. For the DDA fellowship the maximum period is 3yers for all BS-to-PhD. No renewals after this period are possible. Students for whom the following two conditions apply are ineligible for the fellowships: 1) prior enrollment as a graduate student for 14 or more long semesters, AND, 2) more than 99 semester credit hours of doctoral study at UTA. Prospective STEM students must be unconditionally admitted in academic good standing, and must remain in academic good standing for the duration of the program.

Course Holds

Proper setup of an assistantship and tuition is a process that requires input from many different offices within UTA. Student should not, in general, need to be concerned with these interdependencies. Nevertheless, some cases where some part of the process has not been appropriately completed, a course hold will prevent registration for classes. Students experiencing course holds should discuss the issue with the graduate advisor in order to have the problem resolved.

Graduate Assistant Health Insurance

UTA is proud to offer health insurance coverage through the **University of Texas System Student Health Insurance Plan (UT SHIP)** to qualifying graduate students. This benefit is provided at no cost to graduate teaching assistants (GTAs) and graduate research assistants (GRAs) who are enrolled in a PhD program and appointed to work at least 20 hours per week (half-time) for a period of at least 4.5 months. The coverage includes **basic individual health insurance** but does **not include** dependent coverage, dental, or vision benefits.

Eligible students are **automatically enrolled** in UT SHIP at the beginning of the Fall and Spring semesters once their assistantship appointment is processed by the academic department and finalized by the Graduate School. Fall coverage runs from **August 15 through December 31**, while Spring coverage extends from **January 1 through August 14**. Students who begin in the Spring and plan to return in the Fall typically maintain continuous coverage through the summer. However, students who graduate at the end of the Spring semester do not receive summer coverage, though they may choose to purchase continuation coverage at their own expense.

After enrollment, students receive an email from **Academic Health Plans (AHP**) with details on how to access their insurance ID card, add optional coverage (such as dental, vision, or dependent coverage), or submit a waiver if they have alternative insurance. Most students benefit from accepting UT SHIP coverage since it is fully funded by UTA. Those who wish to **opt out** of UT SHIP must do so **within 31 days of their hire date** by providing proof of other insurance and submitting a waiver form to their college.

In addition to UT SHIP, GTAs and GRAs who meet the eligibility criteria are also classified as **part-time benefits-eligible employees** and may elect to enroll in **UT System Employee Group Insurance** programs. These include group medical (UT Select), dental, vision, life insurance, disability plans, flexible spending accounts, and voluntary retirement plans. UTA contributes 50% of the premium for the employee's basic coverage (medical, prescription, and life insurance) and up to 25% for dependent medical coverage. Because the university only partially covers these premiums, students enrolled in UT employee benefits will incur out-of-pocket costs.

Students who choose to remain on UT SHIP may waive UT Select (the UT System employee medical plan) and apply the university's premium-sharing contribution toward other optional employee benefits such as dental, vision, or accidental death and dismemberment insurance. To take advantage of this, students should first accept UT SHIP coverage and obtain proof of insurance. They should then log into **My UT Benefits**, waive the UT Select medical plan, enroll in their selected optional benefits, upload their UT SHIP proof of coverage, and accept the premium-sharing credit. While the full premium will initially display, it will adjust after the waiver is processed and approved.

It is important to note that **optional benefits** (such as dental and vision) obtained through UT System Employee Benefits **terminate if a student's GTA or GRA appointment does not extend into the summer.** Assistantship appointments do not automatically renew for the summer, so students should carefully consider this when choosing insurance options. Additionally, students covered by UT SHIP during the summer who are **not enrolled in summer classes** will be charged a co-pay at the Student Health Center. The co-pay is waived only for students who are enrolled and have paid the **Medical Services Fee**.

Students who wish to add dependent coverage to their UT SHIP plan can do so by visiting https://uta.myahpcare.com/enrollment and selecting the "**Funded Graduate Student Employees (PhD and Terminal Masters)**" section. Dependent premiums are paid directly by the student.

All graduate assistants are encouraged to **compare their options carefully** and consult with the **Office of Employee Benefits** at 817-272-5554 or benefits@uta.edu for questions about UT System employee group insurance programs. For questions regarding UT SHIP, students may also contact graduate.studies@uta.edu or visit the AHP website at https://uta.myahpcare.com.

Teaching Assistantships

Teaching Assistant (TA) Expectations for Undergraduate Physics and Astronomy Labs.

As a Teaching Assistant (TA) for undergraduate Physics and Astronomy labs, you will play a vital role in supporting students' hands-on learning. Your responsibilities will include preparing and conducting lab sessions, assisting students, grading assignments, and ensuring a safe and productive environment. Below are the detailed expectations for this position.

General Responsibilities

Preparation for Lab Sessions

- It is your responsibility to review the experiment thoroughly before each lab session to understand its objectives and procedures.
- Set up lab equipment and materials, ensuring everything is functional and ready for use.
- Anticipate potential questions or difficulties students might encounter.

Conducting Lab Sessions

- Explain the experiment's goals, procedures, and safety protocols clearly to students.
- Demonstrate proper techniques and the use of lab equipment.
- Supervise students throughout the session to ensure they follow instructions and work safely.

Student Assistance

- Answer questions about the experiment, concepts, or equipment.
- Provide hands-on help with troubleshooting issues (e.g., equipment malfunctions, data collection).
- Enforce safety rules and address any unsafe behavior immediately.

Grading and Feedback

- All lab reports submitted by students must be graded and returned within 7 calendar days from the submission date. For example, if a lab report is submitted on Monday, it must be graded and returned no later than the following Monday before the lab.
- Graded lab reports to students either in person during the next lab session or electronically via Canvas (if applicable).

- Upload grades on the Canvas and be prepared to submit these records to the course instructor or lab coordinator upon request.
- No exceptions will be made for late grading unless pre-approved by the course instructor or lab coordinator due to extenuating circumstances.

Feedback must address:

- Provide clear, constructive feedback on each lab report to support student learning.
- Accuracy of calculations and data analysis.
- Clarity of written explanations.
- Adherence to lab objectives and guidelines.
- Use the provided grading rubric to ensure consistency and fairness.

Office Hours and Additional Support

- Hold regular office hours or be available for consultations outside of lab time.
- Provide extra assistance to students who need help with lab concepts or assignments.

Required Skills and Knowledge

Physics Labs

- Familiarity with experimental setups commonly used in undergraduate courses (e.g., mechanics, optics, electricity and electronics).
- Proficiency in measurement techniques and data analysis, such as error analysis and graphing.

Astronomy Labs

- Knowledge of telescope operation and basic observational techniques.
- Understanding of celestial coordinates (e.g., right ascension, declination) and astronomical data analysis.

Key Qualities and Competencies

Patience and Communication

- English Proficiency for Graduate Teaching Assistants: An applicant who is a non-native speaker of English must submit a score on the Speaking section of the TOEFL of at least 23 or a score of at least 7 on the Speaking section of the IELTS. Alternatively, students who have failed to attain a score of 23 on the Speaking section of the TOEFL or a score of 7 on the Speaking section of the IELTS, may satisfy the English proficiency requirement by taking the course of Developmental English and pass it. The English proficiency requirement will be

waived for non-native speakers of English who possess a Bachelor's degree from an accredited US institution.
- Ability to explain complex Physics and Astronomy concepts in a clear, patient manner suited to undergraduate learners.
- Approachability to encourage students to ask questions and seek clarification.

Safety Awareness

- Strict enforcement of lab safety protocols (e.g., proper equipment handling, turning equipment off after finishing labs).
- Readiness to respond to minor accidents or emergencies, such as knowing first aid or evacuation procedures.

Time Management

- Efficiently manage preparation, teaching, and grading tasks alongside your own academic or research commitments.
- Ensure all responsibilities are completed in a timely manner.

Performance Evaluation Your performance as a TA will be assessed through:

- Student Evaluations: Feedback from students at the end of the term regarding your effectiveness and support.
- Faculty Observations: Periodic check-ins or observations by the course instructor or lab coordinator.
- Self-Assessments: Opportunities to reflect on your teaching experience and identify areas for growth.

Additional Notes

- Training: You must need to attend a TA orientation or training session prior to the semester to familiarize yourself with lab procedures and expectations.
- Collaboration: Work closely with the course instructor or lab coordinator to align your teaching with course goals.
- Professionalism: Maintain a professional attitude in all interactions with students, faculty, and staff.

By fulfilling these expectations, you will help create a positive and effective learning environment for undergraduate students in Physics and Astronomy labs at UTA. If you have any questions or need further guidance, feel free to contact the lab coordinator.

Research Assistantships

Research assistantships (RA's) are provided by faculty who have sponsored research projects, and offer students the opportunity to focus solely on their research without significant additional service and teaching obligations. Students are strongly encouraged to progress to a research assistantship as soon as they have completed the majority of their required course work.

When selecting a research group or area, students are encouraged to engage in conversations with prospective PhD advisors about the availability of research assistantships in their group. Students who can progress to an RA will have significantly more time to focus on their research than students who remain on TA.

Research assistantships are assigned semester-by-semester, and continuation on an assistantship is contingent on both availability of funding and student performance. Students who lose their research assistantship for any reason may, with agreement from the graduate advisor, resume a teaching assistantship. Decisions as to whether a given student may continue on an RA, as well as the stipend associated with that RA (which must always be at least as high as the TA stipend but can be higher), is at the sole discretion of the Principal Investigator who controls the funding source.

Physics Colloquium

Each week during the semester, the physics department hosts a colloquium that is open to both students and faculty. It covers a broad range of topics and features both local speakers and those from around the country. The level of presentation is designed to appeal to a general physics audience, not just those who work in the research area being covered. The colloquium is a great opportunity to learn about the latest research in fields other than one's own.

Student attendance and participation are strongly encouraged; speakers especially value questions from students. Notices of colloquia are posted prominently around the department. They generally take place on Wednesdays at 4pm, preceded by refreshments at 3:30. More information, including an archive of past colloquia, can be found at:

www.uta.edu/academics/schools-colleges/science/departments/physics/events .

At the end of each semester, a special committee will present 3 awards to UTA students for the best questions asked at a colloquium during the semester. Each award will be accompanied by a stipend of $100.

Graduate Student Enrollment Requirements

Graduate assistants seeking more than 20 hours of employment:

The Graduate School will no longer require funded graduate students to seek the Graduate Program's approval to work more than 20 hours during a semester. Employment exceeding 20 hours may be the only means by which some students can continue their studies and complete their degrees. Graduate Advisors, academic departments, and the Office of International Education (OIE) can ensure that students are not employed at levels that will impact degree completion negatively or exceed employment limits allowed by law. Federal law states that international students may not work more than 20 hours a week in long semesters. OIE notifies international students about this requirement at their mandatory orientation. Academic departments wishing to hire an international student in a long semester are responsible for determining if the student already holds other forms of employment. Please note that current CPT and OPT policies are not affected by this change.

Funded and unfunded thesis and dissertation students in final semester:

Whether funded and unfunded, master's thesis students must enroll in 5698 and doctoral students must enroll in the appropriate 6699, 6999, or 7399 in their final semesters.. Please note that international students must still secure permission from the OIE for less than nine hours of enrollment in this situation. (See Graduate Catalog for details and consult your graduate advisor).

Funded and unfunded non-thesis students in final semester:

Because funded and unfunded non-thesis master's students in their final semesters may enroll in master's comprehensive courses or equivalents if required by the student's program or at least one graduate course in the student's program, these students may enroll in as few as three graduate hours to complete their degree requirements. Funded students in this situation will no longer need to request approval from the Office of Graduate Studies for less than nine hours enrollment. Please note that international students must still secure permission from the OIE for less than nine hours of enrollment in this situation.

Transfer Credit

Credit may be transferred from other universities subject to the following restrictions: Only graduate level courses with grades of B or better and approved by the Graduate Studies Committee will be considered for transfer of credit and transfer of credit will be limited to nine hours, or 25% of total units required for the degree, for M.S. students from U.S. universities or a foreign institute (subject to the Graduate School's approval). All transfer courses must have the UT Arlington equivalent course listed. Doctoral students should talk to their advisor on this issue.

Physics Graduate Student Association (PGSA) and American Physical Society Chapter

The PGSA is a student organization that addresses topics of interest and concern to the graduate students and conveys that information to the faculty. The PGSA also helps incoming students transition to graduate student life in the Physics department. All graduate students are encouraged to participate in PGSA activities. The American Physical Society has begun a new program of APS Chapters, and the UTA Chapter is one of the inaugural Chapters. The Chapter connects graduate students and PostDocs to APS resources and professional development opportunities. The APS Chapter and the PGSA work closely together.

Students will have the opportunity to enroll in the PGSA during their first year at UTA. Questions about the PGSA can be directed to its executive officers:

President – Morgan Elliott: morgan.elliott@uta.edu
Vice President – Anansa Keaton-Ashanti abk5184@mavs.uta.edu

Graduate Student Senate

The Graduate Student Senate understands the needs and concerns of graduate students here at UT Arlington. Members are appointed to serve on over 20 university-wide committees, insuring graduate students a voice in the university community. The Graduate Student Senate passes resolutions to improve graduate student life on campus, hosts guest speakers to discuss current issues at the university, creates ad-hoc committees to research potential changes in university policy that may impact graduate students, and assists with Graduate Forums, the ACES research symposium, and campus advertising.

To learn more about the Graduate Student Senate visit their website at https://www.uta.edu/studentgovernance/student-government/legislative-branch/graduate-student-senate/index.php

The Masters Program

Degree Plans and Hours Required:

Two degree plans (thesis and non-thesis) leading to the master's degree are available. A student may follow a non-thesis degree plan upon recommendation of the appropriate Committee on Graduate Studies and approval by the Program of Graduate Studies.

The **thesis degree plan** requires a minimum of 30 semester hours, of which at least 24 must be in coursework and six in a thesis course. The Thesis must be approved by the thesis advisor and by a supervising committee of three or more members appointed by the Program of Graduate Studies. The thesis is subject to final approval by the Program of Graduate Studies. Students receiving advice and assistance from a faculty member in the preparation of a thesis must register for the appropriate course even it they are not on campus. Each semester, after consulting with their Graduate Advisor, students must register for the amount of thesis credit commensurate with the efforts to be expended by the student and the thesis advisor in the preparation of the thesis. Once the student is enrolled in the thesis course, continuous enrollment is required. The student must be enrolled in six hours of thesis during the semester the student finishes the semester in which the thesis is successfully defended and the final Master's Examination is unconditionally passes. The degree candidate must defend the thesis in a final oral examination open to all members of the faculty.

The **non-thesis degree plan** requires a minimum of 36 semester hours of course work, of which at least 27 must be in physics.

Master of Science Degree in Physics: Thesis Option

(a) A minimum of 30 hours is required for this degree.
(b) 24 hours will be in physics. The 24 hours in physics include all Group I courses, a choice of two courses from Groups 2 and 3, and Thesis 5698. (The remaining six hours may be selected form physics, mathematics, chemistry, geology, biology, or engineering as approved by the Graduate Advisor).
(c) There are no entry exams, but there is an oral thesis defense.
(d) Students in the M.S. (thesis option) must complete a thesis, and must enroll in Thesis (5698) in their final semester.

Master of Science Degree in Physics: Non-Thesis Option

(a) A minimum of 36 hours is required for this degree.
(b) 27 hours will be in physics. The 27 hours in physics include all Group I courses, and a choice of five courses from Group 2 and Group 3. (The remaining 9 hours may be selected from physics, mathematics, chemistry, geology, biology, or engineering as approved by the Graduate Advisor).
(c) In addition to course requirements, all candidates for the M.S. program (non-thesis option) will be required to pass an exam similar to the Doctoral Qualifying Exam.

Required Courses

Students receiving a masters degree must have taken and passed at least the following courses:

5307 Quantum Mechanics I	5309 Electromagnetic Theory I
5310 Statistical Mechanics	5311 Mathematical Methods in Physics I

Residence

Master's degree candidates are expected to spend the equivalent of two semesters of full-time study in residence at UT Arlington.

Supervising Committees

The program of Graduate Studies will appoint for each master's student a supervising committee upon recommendation by the Graduate Advisor and the appropriate Committee on Graduate Studies. The committee will normally consist of at least three members of the graduate faculty and will be responsible for the design of the student's program. One qualified external person who is not a member of the graduate faculty may serve as a voting member of a supervising committee following a request accompanied by documentation, such as a vita, from the appropriate Committee on Graduate Studies to the program of Graduate Studies and approval by the program of Graduate Studies via a nomination form available from the Graduate School. Any external, non-voting members must be in addition to the three voting members and must be approved by the program of Graduate Studies. The supervising committee conducts the final thesis examination for thesis degree plan candidates and determines scope, content and form of the final master's comprehensive examination for thesis substitute and non-thesis degree plan candidates.

Tentative Program of Work

A Tentative Program of Work listing all accomplished courses, courses in progress and courses required by the student's committee or department may be filed with the Graduate Advisor. This is typically done before a student completes 12 hours of graduate study. If students desire approval to apply up to nine semester hours of transfer credit to their degree program, the Tentative Program of Work may be used to make the request and establish that those courses will satisfy degree requirements at UT Arlington. In all degree plans, the entire degree program must be approved by the appropriate Committee on Graduate Studies and the Program of Graduate Studies.

Final Master's Examination

A final program examination is required for all master's degree candidates. The final master's examination can result in: 1) an unconditional pass with a recommendation to the program of Graduate Studies that the candidate be certified to receive the earned degree; 2) a conditional pass with the requirement that additional conditions be met, which may include further work on the thesis or thesis substitute, additional coursework with a minimum specified grade-point average, or both (in all cases, the final master's examination must be repeated within a specified period); 3) failure, with permission to be re-examined after a specified period; or 4) failure, with recommendation to the program of Graduate Studies that the candidate be dismissed from the program.

For **thesis degree plan** candidates, the examination will be an oral defense of the thesis. The examination will be conducted by all members of the student's supervising committee but will be open to all members of the faculty. The thesis examining committee must have copies of the thesis at least two weeks prior to the thesis defense.

For **non-thesis degree plan** candidates, the final examination will be a comprehensive examination that is written and/or oral. The scope, content and form of the examination(s) shall be determined and administered by all members of the student's supervising committee.

The Final Master's Examination Report must be filed in the Graduate School no later than three weeks before the date on which the candidate expects the degree to be conferred. Thesis degree plan

candidates must each submit one electronic or three unbound paper copies of the unconditionally passed thesis that has been approved for final submission by the Graduate School following all procedures for electronic or paper submission. Details of the submission process and all forms are available through the Virtual Graduate School Advisor.

Master's Thesis

All master's students must be aware of requirements, components and deadlines associated with the thesis, final defense and submission of the thesis to the Graduate School. Thesis format review and approval by the Graduate School are mandatory.

Enrollment Requirement

A thesis degree plan students must be enrolled in the appropriate thesis course (PHYS 5698) in the semester in which the thesis is defended.

Final Submission

Once the student has unconditionally passed the thesis defense, the student may submit the final copy of the thesis. Upload the final copy here: https://uta-etd.tdl.org/. The library will check the front matter, making sure the title, author, abstract and copyright statement is included. When the manuscript is submitted the student will need to complete some paperwork, specifically a non-exclusive license that retains your copyright called an Intellectual Property Statement. The library will note your milestone in MyMav and Records will receive a confirmation that you have submitted your document.

Time Limit

Programs for the master's degree must be completed within six years (time in military service excluded) from initial registration in the Graduate School.

Along the way to their Ph.D., a student in this program has the option to obtain a Non-Thesis Master degree without changing the program to MS-Non-Thesis after a successful pass of the Ph.D. qualifying examination. The student choosing this option must fulfill all the requirements for the degree of MS-Non-Thesis. Diagnostic Evaluation is described in the Doctoral Program below in details.