



Twin Cities Campus

Astrophysics Ph.D.

Astrophysics, Minnesota Institute for

College of Science and Engineering

Link to a [list of faculty](#) for this program.

Contact Information:

Minnesota Institute for Astrophysics, 116 Church Street S.E., Minneapolis, MN 55455 (612-624-4811; fax: 612-626-2029)

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Website: <http://www.astro.umn.edu>

- Program Type: Doctorate
- Requirements for this program are current for Fall 2018
- Length of program in credits: 64
- This program does not require summer semesters for timely completion.
- Degree: Doctor of Philosophy

Along with the program-specific requirements listed below, please read the [General Information](#) section of the catalog website for requirements that apply to all major fields.

Astrophysics is the study of the universe and its constituent parts. The department conducts research in observational, theoretical, and computational astrophysics, as well as instrument development. The main research areas include minor planetary bodies, solar system properties, dynamics of normal and active galaxies, stellar evolution, interaction of stars with their environments, the interstellar medium, astrophysical magnetohydrodynamics, and galactic and cosmological structure. Observational research includes activities that cover X-ray, ultraviolet, optical, infrared, and radio wavelengths. Extensive research programs in space physics, nucleosynthesis, and the elementary particle-cosmology interface are also carried out in interdisciplinary connections with the graduate program in physics.

Program Delivery

This program is available:

- via classroom (the majority of instruction is face-to-face)

Prerequisites for Admission

The preferred undergraduate GPA for admittance to the program is 3.50.

Undergraduate astronomy, physics or equivalent degree required.

Other requirements to be completed before admission:

Coursework in analytical mechanics, electrodynamics, quantum mechanics, thermodynamics, and statistical physics.

Special Application Requirements:

A statement of career goals, scores from the GRE General (Aptitude) Test and Subject (Advanced) Test in physics, and three letters of recommendation are required. Applications are due by January 1 to be considered for fellowships and by January 15 for teaching and research assistantships. Students are admitted fall semester only. Additional application information is available at www.astro.umn.edu/grad/apply/

Applicants must submit their test score(s) from the following:

- GRE

International applicants must submit score(s) from one of the following tests:

- TOEFL
 - Internet Based - Total Score: 79
 - Internet Based - Writing Score: 21
 - Internet Based - Reading Score: 19
 - Paper Based - Total Score: 550
- IELTS
 - Total Score: 6.5
- MELAB
 - Final score: 80

The preferred English language test is Test of English as Foreign Language



Key to [test abbreviations](#)(GRE, TOEFL, IELTS, MELAB).

For an online application or for more information about graduate education admissions, see the [General Information](#) section of the catalog website.

Program Requirements

28 credits are required in the major.

12 credits are required outside the major.

24 thesis credits are required.

This program may be completed with a minor.

Use of 4xxx courses toward program requirements is permitted under certain conditions with adviser approval.

A minimum GPA of 3.0 is required for students to remain in good standing.

The PhD degree requires a minimum of 40 course credits, including 28 credits in the major, and 12 credits in a minor or supporting program; 24 thesis credits are also required.

The graduate written examination, typically held during the week prior to the start of fall semester, must be passed on the second "real" attempt (first-year students are given a free trial). A second-year project must be defended by the end of the fall semester of the third year. The preliminary oral exam must be passed by the end of the third year. Normally, the preliminary oral exam includes a presentation on the second-year project.

Required Courses

The following 2 courses are required for all students. The remaining 20 major credits are chosen in consultation with advisor.

[PHYS 5011](#) - Classical Physics I (4.0 cr)

[PHYS 5012](#) - Classical Physics II (4.0 cr)

Supporting Program

Students must take a minimum of 12 credits in coursework from related fields. Specific courses are chosen in consultation with advisor.

Thesis Credits

Take 24 credits after passing preliminary oral exam.

[AST 8888](#) - Thesis Credit: Doctoral (1.0 - 24.0 cr)