Astronomy, MS

Graduate study in physics and astronomy is highly individualized. Each entering graduate student is assigned a faculty advisor, who assists in preparing a plan of study and in guiding the student's progress.

Learning Outcomes

Graduates will:

- understand the foundational principles that transcend many distinct areas, and learn the technical language, problem-solving skills, and training in technical listening and discussion;
- learn and practice advanced discourse in mathematical aspects that translate to physics;
- become familiar with the state-of-the-art experimental tools and equipment in the field;
- promote aspects of creativity and originality in the field and prepare for adaptability to new discoveries;
- learn and practice advanced discourse in experimental and observational aspects, including data and information mining, translating experimental observations to physical principles and vice versa; and
- learn analysis of data and computational skills as well as become familiar with state-of-the-art techniques for data processing.

Requirements

The Master of Science program in astronomy requires a minimum of 30 s.h. of graduate credit. Students must complete a minimum of 30 s.h. of graduate work, including at least 12 s.h. from the following course list, at least 3 s.h. numbered 5000 or above, and the remainder in courses numbered at least 4000 or above. At least 24 s.h. must be completed under the auspices of the University of Iowa after admission to the Department of Physics and Astronomy. Seminars do not count toward the minimum of 30 s.h. required for the degree. All students must maintain a grade-point average of at least 2.75.

Up to one-third of the program of study may be taken in related scientific fields (e.g., meteorology, geology, electrical engineering); selection of such courses is encouraged.

The degree is offered either with or without a thesis. The MS may be a terminal degree or a step toward a PhD in physics with a subprogram and a dissertation in astronomy or astrophysics. In either case, the final examination is oral, conducted by a committee of three faculty members.

Students must select at least 12 s.h. from these.

Course #	Title	Hours
ASTR:6782	Extragalactic Astronomy	3
ASTR:6785	The Interstellar Medium	3
ASTR:6790	Stellar Astrophysics	3
ASTR:6870	Radiative Processes in Astrophysics	3
ASTR:6880	High Energy Astrophysics	3
ASTR:7775	Special Topics in Astrophysics	1-3
ASTR:7830	Space and Astrophysical Plasma Physics	3
PHYS:7760	General Relativity	2-3
PHYS:7761	Cosmology	3

For the MS with thesis option, students may take no more than 6 s.h. in PHYS:7992 Individual Critical Study and ASTR:7991 Research: Astronomy; and for those who complete the MS without thesis and writing a critical essay, no more than 4 s.h. may be taken in those courses.

Admission

Applicants must meet the admission requirements of the Graduate College; see the Manual of Rules and Regulations on the Graduate College website.

Career Advancement

Graduates have opportunities for employment in universities, colleges, and research laboratories in government and industry. Astronomy graduates have mastered skills that are readily transferable to a number of fields. They might choose to work in engineering, software development, finance, or consulting.

The Pomerantz Career Center offers multiple resources to help students find internships and jobs.

Academic Plans

Sample Plan of Study

Sample plans represent one way to complete a program of study. Actual course selection and sequence will vary and should be discussed with an academic advisor. For additional sample plans, see MyUI.

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Course	Title	Hours
Academic Career		
Any Semester		
30 s.h. must be graduate level coursework; graduate transfer credits allowed upon approval. More information is included in the General Catalog and on department website. [a, b]		
Students must maintain a Graduate College program GPA of 3.00 or higher. [c]		
	Hours	**0**
First Year		
Fall		
Required course [d]		3
Required course [d]		3
Required course [d]		3
	Hours	**9**
Spring		
Required course [d]		3
Elective course (numbered 4000 or above) [e]		3
Elective course (numbered 4000 or above) [e]		3
	Hours	**9**
Second Year		
Fall		
ASTR:7991	Research: Astronomy [f]	2
Elective course (numbered 5000 or above) [e]		3

Elective course (numbered 4000 or above) [e]		3
	Hours	**8**
Spring		
PHYS:7992	Individual Critical Study [f]	2
Elective course (numbered 4000 or above) [e]		2
Final Exam [g]		
	Hours	**4**
	Total Hours	**30**

a Students must complete at least 12 s.h. from list of approved required courses, at least 3 s.h. numbered 5000 or above, and the remainder in courses numbered at least 4000 or above. Note: seminars do not count toward the minimum of 30 s.h. required for the degree.

b Students must complete specific requirements in the University of Iowa Graduate College after program admission. Refer to the Graduate College website and the Manual of Rules and Regulations for more information.

c Graduate College program GPA is comprised of all courses that are approved degree requirements. If a student takes more than the minimum required number of semester hours to complete the degree, but all courses taken are eligible to count toward the degree, those courses will be included in the Graduate College program GPA.

d See the General Catalog for list of approved courses.

e Work with faculty advisor to select appropriate coursework. Up to one-third of the program of study may be taken in related scientific fields (e.g., meteorology, geology, electrical engineering); selection of such courses is encouraged.

f No more than 4 s.h. may be taken from ASTR:7991 and PHYS:7992.

g Oral examination.