

# PHYSICS, MS

The Department of Physics and Astronomy offers the master of science degree in physics with the option of a focused area of study in astronomy. Although we offer a course-only MS, our graduate program is mostly oriented toward current physics research.

Research toward a degree may be conducted in either experimental/observational or theoretical areas. Experimental programs include materials physics, particle physics, astrophysics, and particle astrophysics.

## Admissions

A student who wishes to take graduate work leading to the MS or PhD degree should have the equivalent of an undergraduate major in physics. Any undergraduate courses required to complete a student's preparation should be taken as soon as possible. A comprehensive background in general physics is considered as important as mastery of a specialized field.

In addition to the minimum Graduate School admission requirements, to be considered for regular admission an application must include:

- A resume
- 3 letters of recommendation.

See the Admission Criteria section of this catalog for more information.

## Curricular Requirements

### M.S. in Physics (thesis option)

A total of 24 semester hours of coursework is required (18 of which must be in physics and astronomy), in addition to 6 semester hours of research. Physics students must take:

Code and Title	Hours
<b>Required Courses</b>	
PH 501 Classical Dynamics	3
PH 531 Electromagnetic Theory	3
PH 541 Quantum Mechanics	3
PH 571 Statistical Physics	3
PH 599 Thesis Research	6
PH 597 Physics Seminar (taken every semester in residence)	1
<b>Elective Courses</b>	<b>9</b>

All full-time students must take one hour of seminar PH 597 Physics Seminar each semester. Up to three semester hours of pass/fail coursework ((PH 597 Physics Seminar, PH 598 Non-Thesis Research) and up to three semester hours of PH 590 Research Techniques can count toward the 24 hour course requirement. An oral examination covering coursework and the thesis is required for completion of the degree.

### M.S. in Physics (non-thesis option)

A total of 30 hours of coursework is required, 24 of which must be in physics and astronomy. Students must take:

Code and Title	Hours
<b>Required Courses</b>	
PH 501 Classical Dynamics	3
PH 531 Electromagnetic Theory	3
PH 541 Quantum Mechanics	3

PH 571	Statistical Physics	3
PH 597	Physics Seminar (taken every semester in residence)	1

**Elective Courses** 15

All full-time students must take one hour of seminar PH 597 Physics Seminar each semester. Up to three semester hours of pass/fail coursework (PH 597, PH 598 Non-Thesis Research) and up to three semester hours of PH 590 Research Techniques can count toward the 30 hour course requirement. An oral examination covering coursework is required for completion of the degree.

### M.S. in Physics with Astronomy focused area of study (thesis option)

A total of 24 semester hours of coursework is required (18 of which must be in physics and astronomy), in addition to 6 semester hours of research (PH 599 Thesis Research). Students must take:

Code and Title	Hours	
<b>Required Courses</b>		
PH 501 Classical Dynamics	3	
PH 531 Electromagnetic Theory	3	
PH 541 Quantum Mechanics	3	
AY 521 or AY 533	Theoretical Astrophysics Observational Techniques	3
AY 597	Astrophysics Seminar	1
<b>Elective Courses</b>	<b>9</b>	

All full-time students must take one hour of seminar AY 597 Astrophysics Seminar each semester. Up to three semester hours of pass/fail coursework (AY 597, PH 598 Non-Thesis Research) and up to three semester hours of PH 590 Research Techniques can count toward the 24 hour course requirement. An oral examination covering coursework and the thesis is required for completion of the degree.

### M.S. in Physics with Astronomy focused area of study (non-thesis option)

A total of 30 hours of coursework is required, 24 of which must be in physics and astronomy. Students must take:

Code and Title	Hours	
<b>Required Courses</b>		
PH 501 Classical Dynamics	3	
PH 531 Electromagnetic Theory	3	
PH 541 Quantum Mechanics	3	
AY 521 or AY 533	Theoretical Astrophysics Observational Techniques	3
AY 597	Astrophysics Seminar (taken each semester in residence)	1

**Elective Courses** 15

All full-time students must take one hour of seminar AY 597 Astrophysics Seminar each semester. Up to three semester hours of pass/fail coursework (AY 597, PH 598 Non-Thesis Research) and up to three semester hours of PH 590 Research Techniques can count toward the 30 hour course requirement. An oral examination covering coursework is required for completion of the degree.

## Precision Timing Concentration

Students can take a precision timing concentration if they complete the following courses. This concentration is only available as an option with completion of a thesis.

<b>Precision Timing Concentration (Available only for thesis option)</b>		<b>Hours</b>
Electives - Choose two from the following:		6
PH 590	Research Techniques	
PH 542	Quantum Mechanics	
PH 532	Electromagnetic Theory	
PH 534	Digitl Elect Comp Interfc	
PH 681	Adv Solid State Physics	
PH 591	Advanced Laboratory	
Electrical Engineering Courses		
ECE 593	Special Topics (Control Systems Analysis)	3
ECE 579	Digital Control Systems	3
ECE 693	Special Topics (in Precision Timing Applications)	3
Statistics Course		
MATH 551	Math Stats W/Applictn I	3
<b>Total Hours</b>		<b>18</b>

## Transfer Credit

Transfer of credit should be discussed with the departmental graduate director before submitting a transfer request to the graduate school.

See general Academic Policies: Degree Requirements for Masters Degrees.

## Accelerated Master's Program

Accelerated master's students must fulfill the same requirements, except that they need not register for PH 597 or AY 597 during the second-to-last year of their program.

See general Academic Policies: Admission Criteria for the Accelerated Masters Program.

## Comprehensive Exam

All master's students must complete a comprehensive (oral) exam with a committee approved by the department. For students completing a masters with thesis, their thesis defense forms the comprehensive exam.

## Time Limits for Degree Completion Requirements

See general Academic Policies: Degree Requirements for Masters Degrees.

## Student Progress Requirements

Students who are supported on assistantships are subject to semester and annual reviews to evaluate progress, with their support being discontinued in the case of insufficient progress. Generally assistantships for master's study are not provided beyond 2 years after entry, and may be discontinued earlier if it is unlikely the degree will be completed before then.

Note that the general Academic Policies: Grades and Academic Standing pertaining to Academic Standing provide for dismissal of students based on their GPA and hours.

## Academic Misconduct Information

See general Academic Policies: Academic Misconduct.

## Withdrawals and Leave of Absence Information

See general Academic Policies: Withdrawals and Leave of Absence.

## Academic Grievances Information

See General Information: Grievance Procedure.

## Grades and Academic Standing

See general Academic Policies: Grades and Academic Standing.

## Graduate School Deadlines Information

See Graduate School Deadlines.

## Application for Graduation Information

See the Application for Graduation sub-section of the general Academic Policies: Degree Requirements for Master's Degrees.