

# MINOR IN ASTRONOMY

## Program Learning Outcomes for the Minor in Astronomy

Upon completing the minor in Astronomy, students will be able to:

1. Demonstrate a broad knowledge of basic astronomical or solar system topics.
2. Acquire and demonstrate knowledge in several advanced topics of their choosing.

## Requirements for the Minor in Astronomy

Students pursuing the minor in Astronomy must complete:

- A minimum of 27 credit hours to satisfy minor requirements.
- A maximum of 1 course (3 credit hours) from study abroad or transfer credit. For departmental guidelines regarding transfer credit, see the [Policies](#) (p. 1) tab.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor's academic advisor, or where applicable, the Program Director. (Course substitutions must be formally applied and entered into Degree Works by the minor's [Official Certifier](https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/) (<https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/>)). Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

Code	Title	Credit Hours
Total Credit Hours Required for the Minor in Astronomy		Minimum of 27

### Minor Requirements

Code	Title	Credit Hours
<b>Required Prerequisites</b> <sup>1</sup>		
MATH 101 or MATH 105	SINGLE VARIABLE CALCULUS I <sup>2</sup> AP/OTH CREDIT IN CALCULUS I	3
MATH 102 or MATH 106	SINGLE VARIABLE CALCULUS II <sup>2</sup> AP/OTH CREDIT IN CALCULUS II	3
<i>Select 1 from the following:</i> <sup>3</sup>		4
PHYS 101 & PHYS 103	MECHANICS (WITH LAB) and MECHANICS DISCUSSION	
PHYS 111	HONORS MECHANICS (WITH LAB)	
<i>Select 1 from the following:</i> <sup>4</sup>		4
PHYS 102 & PHYS 104	ELECTRICITY & MAGNETISM (WITH LAB) and ELECTRICITY AND MAGNETISM DISCUSSION	
PHYS 112	HONORS ELECTRICITY & MAGNETISM (WITH LAB)	

Additional Required Prerequisites<sup>1</sup>

#### Core Requirement

<i>Select 1 course from the following:</i>		3
ASTR 101	STARS, GALAXIES, AND THE UNIVERSE	

ASTR 102	EXPLORATION OF THE SOLAR SYSTEM	
<b>Elective Requirements</b> <sup>1</sup>		
<i>Select 3 courses from the following:</i>		9
ASTR 230	ASTRONOMY LAB	
ASTR 243	LIVING WITH A STAR: THE PHYSICS OF THE SUN-EARTH CONNECTION	
ASTR 350	INTRODUCTION TO ASTROPHYSICS-STARS	
ASTR 360	INTRODUCTION TO ASTROPHYSICS-GALAXY AND COSMO	
ASTR 408	STATISTICAL METHODS IN PHYSICS AND ASTRONOMY	
ASTR 461	INDEPENDENT RESEARCH IN ASTRONOMY <sup>5</sup>	

#### Seminar Requirement

ASTR 400	UNDERGRADUATE RESEARCH SEMINAR	1
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**Total Credit Hours** **Minimum of 27**

### Footnotes and Additional Information

- <sup>1</sup> Depending on the courses selected as Elective Requirements, a variety of required prerequisites (5-13 credit hours) in MATH, PHYS, and/or COMP may be required **in addition** to the chosen Elective courses and the required prerequisites listed above, resulting in more than the minimum of 27 credit hours required for the minor. Students need to have their proposed plan-of-study approved by the Minor Official Certifier for the course to qualify for the minor.
- <sup>2</sup> Students without credit for basic calculus (e.g. MATH 101/MATH 105 and/or MATH 102/MATH 106) must either enroll in the relevant course(s) or substitute more advanced MATH or CMOR coursework, with prior approval by the Physics and Astronomy department's Undergraduate Program Committee, to earn the required credit.
- <sup>3</sup> The Physics department has determined that credit awarded for PHYS 141 *CONCEPTS IN PHYSICS I* is not eligible for meeting the requirements of the Astronomy minor.
- <sup>4</sup> The Physics department has determined that credit awarded for PHYS 142 *CONCEPTS IN PHYSICS II* is not eligible for meeting the requirements of the Astronomy minor.
- <sup>5</sup> ASTR 461 *Independent Research in Astronomy* is a variable credit hour course and will only fulfill Elective Requirements when taken for at least 3 credit hours.

## Policies for the Minor in Astronomy

### Program Restrictions and Exclusions

Students pursuing the minor in Astronomy should be aware of the following program restrictions:

- As noted in [Majors, Minors, and Certificates](https://ga.rice.edu/undergraduate-students/academic-opportunities/majors-minors-certificates/) (<https://ga.rice.edu/undergraduate-students/academic-opportunities/majors-minors-certificates/>), i.) students may declare their intent to pursue a minor only after they have first declared a major, and ii.) students may not major and minor in the same subject.

### Transfer Credit

For Rice University's policy regarding transfer credit, see [Transfer Credit](https://ga.rice.edu/undergraduate-students/academic-policies-procedures/transfer-credit/) (<https://ga.rice.edu/undergraduate-students/academic-policies-procedures/transfer-credit/>). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of [transfer credit advisors](https://) (<https://>

[oaa.rice.edu/advising-network/transfer-credit-advisors/](https://oaa.rice.edu/advising-network/transfer-credit-advisors/)) on their website: <https://oaa.rice.edu>. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

### **Departmental Transfer Credit Guidelines**

Students pursuing the minor in Astronomy should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

### **Additional Information**

For additional information, please see the Physics and Astronomy website: <https://physics.rice.edu/>

## **Opportunities for the Minor in Astronomy**

### **Academic Honors**

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (<https://ga.rice.edu/undergraduate-students/honors-distinctions/university/>) (*summa cum laude*, *magna cum laude*, and *cum laude*) and Distinction in Research and Creative Work (<https://ga.rice.edu/undergraduate-students/honors-distinctions/university/>). Some departments have department-specific Honors awards or designations.

### **Additional Information**

For additional information, please see the Physics and Astronomy website: <https://physics.rice.edu/>