

BACHELOR OF ARTS (BA) DEGREE WITH A MAJOR IN PHYSICS

Program Learning Outcomes for the BA Degree with a Major in Physics

Upon completing the BA degree with a major in Physics, students will be able to:

1. Demonstrate an understanding of fundamental concepts in Mechanics.
2. Demonstrate an understanding of fundamental concepts in Electromagnetism.
3. Demonstrate an understanding of fundamental concepts in Quantum Mechanics.
4. Demonstrate an understanding of a variety of physics topics taken from: statistical and thermal physics, biological physics, nuclear and particle physics, solid state physics, computational physics, and/or plasma physics.

Requirements for the BA Degree with a Major in Physics

For general university requirements, see [Graduation Requirements \(https://ga.rice.edu/undergraduate-students/academic-policies-procedures/graduation-requirements/\)](https://ga.rice.edu/undergraduate-students/academic-policies-procedures/graduation-requirements/). Students pursuing the BA degree with a major in Physics must complete:

- A minimum of 45-47 credit hours, depending on course selection, to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 14-16 credit hours, depending on course selection, taken at the 300-level or above.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the department's undergraduate committee. (Course substitutions must be formally applied and entered into Degree Works by the major'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 Major in Physics		45-47
Total Credit Hours Required for the BA Degree with a Major in Physics		120

Degree Requirements

Code	Title	Credit Hours
Core Requirements		
MATH 101 or MATH 105	SINGLE VARIABLE CALCULUS I AP/OTH CREDIT IN CALCULUS I	3
MATH 102	SINGLE VARIABLE CALCULUS II	3

or MATH 106	AP/OTH CREDIT IN CALCULUS II	
MATH 211	ORDINARY DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA	3
or MATH 220 or MATH 221	HONORS ORDINARY DIFFERENTIAL EQUATIONS HONORS CALCULUS III	
MATH 212	MULTIVARIABLE CALCULUS	3
or MATH 222	HONORS CALCULUS IV	
<i>Select 1 from the following:</i>		4
PHYS 101 & PHYS 103 PHYS 111	MECHANICS (WITH LAB) and MECHANICS DISCUSSION HONORS MECHANICS (WITH LAB)	
<i>Select 1 from the following:</i>		4
PHYS 102 & PHYS 104 PHYS 112	ELECTRICITY & MAGNETISM (WITH LAB) and ELECTRICITY AND MAGNETISM DISCUSSION HONORS ELECTRICITY & MAGNETISM (WITH LAB)	
PHYS 201	WAVES, LIGHT, AND HEAT	3
PHYS 202	MODERN PHYSICS	3
PHYS 231	ELEMENTARY PHYSICS LAB	1
PHYS 311	INTRODUCTION TO QUANTUM PHYSICS I	3
<i>Select 2 courses from the following:</i>		6-8
PHYS 301	INTERMEDIATE MECHANICS	
PHYS 302	INTERMEDIATE ELECTRODYNAMICS	
PHYS 312	INTRODUCTION TO QUANTUM PHYSICS II	
PHYS 355	INTRODUCTION TO BIOLOGICAL PHYSICS	
PHYS 411	INTRODUCTION TO NUCLEAR AND PARTICLE PHYSICS	
PHYS 416	COMPUTATIONAL PHYSICS	
PHYS 425	STATISTICAL & THERMAL PHYSICS	
PHYS 480	INTRODUCTION TO PLASMA PHYSICS	
<i>Select 6 additional credit hours of departmental (PHYS) or (ASTR) courses at the 300-level or above.¹</i>		6
<i>Select 1 course from the following:</i>		3
CAAM 210	INTRODUCTION TO ENGINEERING COMPUTATION	
1 course from Computational and Applied Mathematics (CAAM) course offerings at the 300-level or above.		
1 course from Mathematics (MATH) course offerings at the 300-level or above.		
Total Credit Hours Required for the Major in Physics		45-47
Additional Credit Hours to Complete Degree Requirements *		42-44
University Graduation Requirements (https://ga.rice.edu/undergraduate-students/academic-policies-procedures/graduation-requirements/) *		31
Total Credit Hours		120

Footnotes and Additional Information

* **Note:** [University Graduation Requirements](#) include 31 credit hours, comprised of Distribution Requirements (Groups I, II, and III), FWIS, and LPAP coursework. In some instances, courses satisfying major requirements may additionally meet distribution requirements. [Additional Credit Hours to Complete Degree Requirements](#) include general electives, coursework completed as upper-level, residency (hours taken at Rice), and/or any other additional academic program requirements.

¹ Includes PHYS 332, PHYS 461, and PHYS 462, but does not include PHYS 491, PHYS 492, PHYS 493, or PHYS 494.

Policies for the BA Degree with a Major in Physics

Program Restrictions and Exclusions

Students pursuing the BA Degree with a Major in Physics 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/>) under *Declaring Majors, Minors and Certificates*, students may not obtain both a BA and a BS in the same major. Students pursuing the BA Degree with a Major in Physics may not additionally pursue the BS Degree with a Major in Physics.
- As noted in [Majors, Minors, and Certificates](#) (<https://ga.rice.edu/undergraduate-students/academic-opportunities/majors-minors-certificates/>), 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/>). 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 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 major in Physics 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 BA Degree with a Major in Physics

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.

Research in the Department of Physics and Astronomy

The Physics and Astronomy Department encourages undergraduate participation in research, both within the department and through extramural programs. For current opportunities, please visit the Department's website and click on the *Research* link, at: <https://physics.rice.edu/>.

Additional Information

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