MINOR IN PHYSICS

Program Learning Outcomes for the Minor in Physics

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

1. Acquire and demonstrate a solid foundation of knowledge in physics. This includes: basic mechanics, basic electromagnetism, Maxwell's equations in differential form, waves, interference and diffraction, special relativity, the Schrödinger equation, and the wave formulation of quantum mechanics.
2. Acquire and demonstrate knowledge in a number of advanced physics topics of their choosing.

Requirements for the Minor in Physics

Students pursuing the minor in Physics must complete:

- A minimum of 29 credit hours to satisfy minor requirements.
- A minimum of 26 credit hours to satisfy the Core Requirements.
- A minimum of 3 additional credit hours from departmental (PHYS) course offerings at the 300-level or above.

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/)). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Credit Hours Required for the Minor in Physics</td>
<td>29</td>
<td></td>
</tr>
</tbody>
</table>

Minor Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
</table>
| Core Requirements
Select 1 from the following:  
PHYS 101 | MECHANICS (WITH LAB) & MECHANICS DISCUSSION | 4            |
PHYS 102 | ELECTRICITY & MAGNETISM (WITH LAB) & ELECTRICITY AND MAGNETISM DISCUSSION | 4            |
PHYS 111 | HONORS MECHANICS (WITH LAB) | 4            |
PHYS 112 | HONORS ELECTRICITY & MAGNETISM (WITH LAB) | 4            |
MATH 101 | SINGLE VARIABLE CALCULUS I  
or MATH 105 | SINGLE VARIABLE CALCULUS I  | 3            |
MATH 102 | SINGLE VARIABLE CALCULUS II  
or MATH 106 | SINGLE VARIABLE CALCULUS II  | 3            |
MATH 211 | ORDINARY DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA | 3            |
MATH 212 | MULTIVARIABLE CALCULUS | 3            |
MATH 221 | HONORS CALCULUS III  
or MATH 222 | HONORS CALCULUS IV  | 3            |
or MATH 232 | HONORS MULTIVARIABLE CALCULUS | 3            |
PHYS 201 | WAVES, LIGHT, AND HEAT | 3            |
PHYS 202 | MODERN PHYSICS | 3            |
| Elective Requirement
Select 3 additional credit hours from departmental (PHYS) course offerings at the 300-level or above. | 3            |

Total Credit Hours | 29            |

Footnotes and Additional Information

1. The Physics department has determined that credit awarded for PHYS 141 CONCEPTS IN PHYSICS I is not eligible for meeting the requirements of the Physics minor.
2. The Physics department has determined that credit awarded for PHYS 142 CONCEPTS IN PHYSICS II is not eligible for meeting the requirements of the Physics minor.
3. 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.
4. The Elective Requirement can be fulfilled by PHYS 461 and PHYS 462, but PHYS 491, PHYS 493, PHYS 492, and PHYS 494 cannot be used to fulfill this requirement.

Policies for the Minor in Physics

Program Restrictions and Exclusions

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

- As noted in (see Majors, Minors, and 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.
- Students pursuing the major in Astronomy may not declare the minor in Physics.
- Students pursuing the major in Astrophysics may not declare the minor in Physics.
- Students pursuing the major in Chemical Physics may not declare the minor in Physics.

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 (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 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 Minor 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.

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