

DOCTOR OF PHILOSOPHY (PHD) DEGREE IN THE FIELD OF PHYSICS

Program Learning Outcomes for the PhD Degree in the field of Physics

Upon completing the PhD degree in the field of Physics, students will be able to:

1. Demonstrate advanced knowledge in foundational areas of physics and astronomy, and a mastery of their selected subfield.
2. Have the skills necessary to conduct independent research in physics and astronomy and become leaders in their chosen careers.
3. Have the ability to identify, formulate, and solve challenging scientific and technical problems as encountered in physics and astronomy.
4. Be proficient in reading the scientific literature and in oral and written communication of scientific results.
5. Make an original and significant contribution to knowledge in their discipline.

Requirements for the MS and PhD Degrees in the field of Physics

MS Degree Program

The MS degree is a non-thesis master's degree. For general university requirements, please see [Non-Thesis Master's Degrees \(https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-non-thesis-masters-degrees/\)](https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-non-thesis-masters-degrees/). For additional requirements, regulations, and procedures for all graduate programs, please see [All Graduate Students \(https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-all-degrees/\)](https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-all-degrees/). Although students are not normally admitted to study for an MS, graduate students may earn the MS along the way to the PhD. The department admits graduate students into the doctoral program. It is not the intent to admit students who only wish to pursue a master's degree. Students pursuing the MS degree in the field of Physics must complete:

- A minimum of 30 credit hours of approved coursework to satisfy degree requirements.

Complete information about research opportunities, courses, and other requirements can be found on the *Graduate Program* tab of the [department website \(https://physics.rice.edu/\)](https://physics.rice.edu/).

The requirements listed in the General Announcements (GA) satisfy the minimum requirements for this degree program. In certain instances, courses (or requirements) not officially listed here may be substituted upon approval of the program's academic advisor or, where applicable, the department or program's Director of Graduate Studies. Course substitutions or any exceptions to the stated official curricular requirements must be approved by the [Office of Graduate and Postdoctoral Studies \(https://graduate.rice.edu/\)](https://graduate.rice.edu/). 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 MS Degree in the field of Physics		Minimum of 30

PhD Degree Program

For general university requirements, please see [Doctoral Degrees \(https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-doctoral-degrees/\)](https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-doctoral-degrees/). For additional requirements, regulations, and procedures for all graduate programs, please see [All Graduate Students \(https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-all-degrees/\)](https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-all-degrees/). To be eligible for the PhD degree, graduate students must demonstrate to the department their knowledge in the discipline and the ability to engage in advanced research. Students pursuing the PhD degree in the field of Physics must complete:

- A minimum of 90 credit hours to satisfy degree requirements, including research and teaching, beyond the Bachelor's Degree.
- All coursework specified for their matriculating class and any additional courses required by the thesis advisor.
- A minimum residency enrollment of four fall and/or spring semesters of full-time graduate study at Rice University.
- A research project involving independent and original work. The work must be successfully completed, reported in an approved thesis, and defended in a public oral examination.

Complete information about research opportunities, courses, and other requirements can be found on the *Graduate Program* tab of the [department website \(https://physics.rice.edu/\)](https://physics.rice.edu/).

The requirements listed in the General Announcements (GA) satisfy the minimum requirements for this degree program. In certain instances, courses (or requirements) not officially listed here may be substituted upon approval of the program's academic advisor or, where applicable, the department or program's Director of Graduate Studies. Course substitutions or any exceptions to the stated official curricular requirements must be approved by the [Office of Graduate and Postdoctoral Studies \(https://graduate.rice.edu/\)](https://graduate.rice.edu/). 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 PhD Degree in the field of Physics		90

Coursework

All degree programs in Physics and Astronomy require students to complete certain courses with satisfactory grades.

- Completion of PHYS 710, *Graduate Seminar in Physics and Astronomy*, during the first Fall semester in residence.
- A minimum of 8 courses (24 credit hours) of graduate-level study (graduate semester credit hours, coursework at the 500-level or above). Courses must be taken for at least 3 credit hours each, selected from graduate-level courses (coursework at the 500-

level or above), other than teaching or research, in the Physics and Astronomy Department.

Research

The PhD in physics is awarded for original research in physics. The candidate must write a doctoral thesis and publicly defend it in the final oral examination, which is conducted by the PhD Examination Committee

Teaching

The department considers teaching experience an essential part of graduate training. Thus, full-time graduate students should expect to assume some teaching duties (e.g., teaching labs, grading papers, grading exams, etc.) in addition to research. The department accounts for the labor effort in units of nominal 5-hour/week semester blocks. Assignments typically begin in the second semester at Rice, with one such unit that semester. A student is expected to complete a total of four of such units.

Advancement to Candidacy for the PhD

By the end of the fifth week of the student's fifth semester, the student must complete (1) a Research Progress and Proposal (RPP) report and an oral research presentation of that report; and (2) an oral candidacy exam to the satisfaction of a faculty examining committee. If needed, a second attempt at the candidacy exam must be completed by the end of the student's fifth semester. The examining committee will certify the student as an acceptable candidate for the PhD in the research area covered by the RPP.

Policies for the PhD Degree in the field of Physics

Department of Physics and Astronomy Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Physics and Astronomy publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2024_25/Physics_Astronomy_Graduate_Handbook.pdf.

Transfer Credit

For Rice University's policy regarding transfer credit, see [Transfer Credit](https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-all-degrees/#transfer) (<https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-all-degrees/#transfer>). Some departments and programs have additional restrictions on transfer credit. Requests for transfer credit must be approved for Rice equivalency by the appropriate academic department offering the Rice equivalent course (corresponding to the subject code of the course content) and by the Office of Graduate and Postdoctoral Studies (GPS). Students are encouraged to meet with their academic program's advisor when considering transfer credit possibilities.

Additional Information

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

Opportunities for the PhD Degree in the field of Physics

Additional Information

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