

Physics, PhD

LAPHYSIPHD

Do you want to pursue independent research at the frontiers of knowledge? The Department of Physics hosts leading theoretical and experimental programs with a wide variety of opportunities that will help you grow as a physicist and enable you to make exciting discoveries.

Program description

Degree awarded: PHD Physics

The PhD program in physics is intended for highly capable students who have the interest and ability to follow a career in independent research.

The recent advent of the graduate faculty initiative at ASU extends the spectrum of potential physics doctoral topics and advisors to include highly transdisciplinary projects that draw upon:

- biochemistry
- biology
- chemistry
- electrical engineering
- materials science
- other related fields

Consequently, students and doctoral advisors can craft novel doctoral projects that transcend the classical palette of physics subjects. Transdisciplinary expertise of this nature is increasingly vital to modern science and technology.

Current areas of particular emphasis within the department include:

- biological physics
- cosmology
- electron diffraction and imaging
- nanoscale and materials physics
- particle physics and astrophysics

The department has more than 90 doctoral students and more than 40 faculty members.

At a glance

- **College/School:** [The College of Liberal Arts and Sciences](#)
- **Location:** [Tempe](#)

Degree requirements

84 credit hours, a written comprehensive exam, an oral comprehensive exam, a prospectus and a dissertation

Required Core (18 credit hours)

PHY 500 Research Methods (6)

PHY 521 Classical and Continuum Mechanics (3)

PHY 531 Electrodynamics (3)

PHY 541 Statistical Physics (3)

PHY 576 Quantum Theory (3)

Electives or Research (54 credit hours)

Culminating Experience (12 credit hours)

PHY 799 Dissertation (12)

Additional Curriculum Information

Of particular note within the core courses are the PHY 500 Research Methods rotations, which are specifically designed to engage doctoral students in genuine, faculty-guided research starting in their first semester. Students complete three credit hours of PHY 500 in both their fall and spring semesters of their first year, for a total of six credit hours.

Coursework beyond the core courses is established by the student's doctoral advisor and supervisory committee, working in partnership with the student. The intent is to tailor the doctoral training to the specific research interests and aptitudes of the student while ensuring that each graduating student emerges with the expertise, core knowledge and problem-solving skills that define having a successful doctoral degree in physics.

When approved by the student's supervisory committee and the Graduate College, this program allows 30 credit hours from a previously awarded master's degree to be used for this degree. If students do not have a previously awarded master's degree, the 30 credit hours of coursework are made up of electives to reach the required 84 credit hours.

Admission requirements

Applicants must fulfill the requirements of both the Graduate College and The College of Liberal Arts and Sciences.

Applicants are eligible to apply to the program if they have earned a bachelor's or master's degree in physics or a closely related area from a regionally accredited institution. Applicants must have had adequate undergraduate preparation equivalent to an undergraduate major of 30 credit hours in physics and 20 credit hours in mathematics. Courses in analytic mechanics, electromagnetism and modern physics, including quantum mechanics, are particularly important.

Applicants must have a minimum cumulative GPA of 3.00 (scale is 4.00 = "A") in the last 60 hours of their first bachelor's degree program or a minimum GPA of 3.00 (scale is 4.00 = "A") in an applicable master's degree program.

All applicants must submit:

1. graduate admission application and application fee
2. official transcripts
3. personal statement
4. resume
5. three letters of recommendation
6. proof of English proficiency

Additional Application Information

An applicant whose native language is not English must provide proof of [English proficiency](#) regardless of their current residency.

Applicants requesting credit for prior graduate courses, taken either at ASU or elsewhere, must demonstrate mastery of the relevant course material to the graduate-level standards of the Department of Physics.

Tuition information

When it comes to paying for higher education, everyone's situation is different. Students can learn about [ASU tuition and financial aid](#) options to find out which will work best for them.

Career opportunities

As professional physicists, graduates can advance the frontiers of physics by generating new knowledge in their subfields while working on the most challenging scientific problems at the forefront of human understanding. Graduates find positions in a variety of settings, such as administration, government labs, industrial labs and management, and as academic faculty.

Physicists are valued for their analytical, technical and mathematical skills and find employment in a vast array of employment sectors, including:

- academia
- engineering
- finance
- technology

Contact information

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