

PhD in Physics

program description

The Department of Physics offers a Doctor of Philosophy in Physics that consists of 72 credit hours beyond the bachelor's level or at least 54 hours beyond the master's level. The program puts emphasis on Quantum Science but also offers education and research opportunities in other traditional areas consistent with faculty strength. The program is designed to provide excellent education and training in computational and experimental Physics and to prepare students for academic, industrial, and government jobs.

admission requirements

The following admission requirements will be pursued:

- Bachelor's degree in Physics or a related discipline from an accredited university in the United States. Proof of a similar degree will be required for international students.
- Minimum GPA of 3.3. Students with one or more years of career-related physics expertise may petition to have the minimum GPA requirement reconsidered.
- Official transcripts of previous academic degrees
- Official TOEFL scores as per UTEP Graduate School policy.
- Two letters of recommendation from individuals who are qualified to comment on the potential of the applicant.
- Curriculum vitae
- Statement of purpose from the applicant detailing research interests, reason for application, and future career plans.

degree requirements

The PhD degree will require 72 semester credit hours beyond the bachelor's level. A student entering with a master's degree in physics may transfer up to 18 semester credit hours with the approval of the Graduate advisor and graduate committee. Students that do not meet the prerequisites for the courses may need to take leveling courses. Each case will be individually determined by the Graduate advisor.

Students entering with a bachelor's degree are required to take 42 semester credit hours of course work. This includes four core and three required courses, one prescribed elective and six free elective courses. The students will need to pass the qualifying examinations by the fourth semester.

Students entering with an MS degree can transfer up to 18 semester credit hours of credit for the lecture courses. If credit for any core course is transferred, the student will have to pass the qualifying exam for the transferred course(s) by the end of the first academic year.

In the third year, students will have to write and defend a proposal for their doctoral research. All students will have to write a dissertation based on their original research and defend it to their dissertation committee to earn the degree.

doctoral research

Doctoral students must complete at least 24 hours of original doctoral research in addition to the 42 hours of graduate courses. The student must work under the supervision of one of the graduate faculty members of the program. The student can take one or more of the graduate research courses as advised by the graduate advisor and the research advisor.

doctoral dissertation

All graduate students must complete a dissertation based on their original research. The dissertation will be supervised by the dissertation advisor, in consultation with a dissertation committee consisting of at least three members, at least one of whom must be a graduate faculty member from outside the Department of Physics. The candidate will present a dissertation proposal for approval by the dissertation committee in the third year. Upon completion of the dissertation, the student must successfully defend their work; part of the defense will be public. The dissertation committee will be responsible for administering the final oral defense and will have the responsibility of determining whether the written dissertation and its oral presentation and defense are acceptable. The student will need to take PHYS 6398 (Dissertation I) and PHYS 6399 (Dissertation II) to complete the supervised dissertation. Dissertation II will be taken until the dissertation is submitted.

Degree Plan PhD Physics

Code	Title	Hours
Core Courses		
Required:		
PHYS 6321	Mechanics	3
PHYS 6341	Electrodynamics I	3
PHYS 6361	Quantum Mechanics I	3
PHYS 6365	Advanced Statistical Mechanic	3

Additional Required Courses:

PHYS 6195	Seminar (3 semesters required)	3
PHYS 6342	Electrodynamics II	3
PHYS 6362	Quantum Mechanics II	3

Prescribed Electives (Select one course)

PHYS 6325	Mathematical Physics	3
PHYS 6355	Experimental Methods	

Electives (Select 6 courses)

PHYS 6331	Nuclear and Particle Physics	18
PHYS 6363	Atomic and Molecular Physics	
PHYS 6364	Density Functional Theory A-Z	
PHYS 6366	Spin Physics	
PHYS 6368	Quantum Computing	
PHYS 6371	Solid State Physics	
PHYS 6375	Computational Biophysics	
PHYS 6381	Astrophysics	
PHYS 6355	Experimental Methods (May be taken only if not taken as a prescribed elective)	
PHYS 6325	Mathematical Physics (May be taken only if not taken as a prescribed elective)	

Doctoral Research

Complete 24 hours:		24
PHYS 6196	Doctoral Research	
PHYS 6296	Doctoral research	
PHYS 6396	Doctoral Research	

Doctoral Dissertation

PHYS 6398	Dissertation I	3
PHYS 6399	Dissertation II	3

Total Hours**72**