Physics, the study of matter and energy, is at the root of every field of natural science and underlies all physical phenomena. Students who pursue master’s degrees in physics or materials physics from Texas State University find careers in a variety of settings, from teaching in classrooms to research in industrial or government laboratories, as self-employed consultants or members of multidisciplinary research teams, or advancing in doctoral degrees.

Texas State’s Roy F. Mitte building houses the Physics department and an extensive materials growth facility including a molecular beam epitaxy system, a state-of-the-art materials characterization system and a nano fabrication facility with a cleanroom where graduate students get hands-on experience that prepares them for careers in high-tech industries or advanced studies.

The Department of Physics strives to provide an exciting and rigorous educational environment that stresses relevant research, classroom learning, extensive use of peer instruction and opportunities for work in industrial settings. Our faculty members conduct research in condensed matter physics, materials physics, physics education and historical astronomy.
Course Work
Master of Science in Physics
• Thesis track: The standard program that leads to a 30-hour master of science degree requires six hours of thesis, Quantum Mechanics II and Electromagnetic Field Theory, nine to 12 hours in physics, six to nine hours in another science (mathematics, computer science, chemistry or biology) or, if the no-minor option is selected, six to nine hours in physics and/or other sciences with prior approval. The Department of Physics offers an especially strong opportunity for thesis research in experimental solid state and materials physics.
• Non-thesis track: A 36-hour master of science degree program without a thesis is also available. This program requires six hours of course work in lieu of the thesis and six hours of additional course work in physics.

Master of Science in Materials Physics
The 35-semester-hour master of science in materials physics requires preparation of a thesis and stresses experimental materials physics primarily related to the semiconductor and other high-tech materials industries. The degree requires six hours of thesis, Seminar in Physics (taken twice), Solid State Physics, Thin Film Materials Laboratory and Industry Internship. In addition, 18 elective hours must be chosen from approved physics courses, with up to nine hours of free electives permitted (with prior departmental approval).

Research
Graduate students are involved in research as part of their degree plan. We have state-of-the-art research facilities within the department and shared user laboratories that provide meaningful experiences for our students, as well as dedicated faculty who work closely with students. Our master’s graduates can continue to an innovative, multidisciplinary Ph.D. program in materials science, engineering and commercialization offered at Texas State.
1. The materials physics and thin film solid state groups prepare master’s graduates for professional employment, including the semiconductor industry and materials high-tech industry, or further graduate study in a doctoral program. Thesis research may utilize thin film sputtering (magnetron and dual ion beam), molecular beam epitaxy, scanning electron microscopy, energy dispersive X-ray spectroscopy, infrared spectroscopy, high resolution X-ray diffraction/reflectivity, scanning probe microscopy (AFM and STM), high-field, low-temperature magnetometry, electrical characterization, ellipsometry, deep-level transient spectroscopy, impedance spectroscopy, FTIR, Raman spectroscopy and photoluminescence. Competitive opportunities for industry internships are available.
2. The physics education research (PER) group focuses on embodied and participationist models of learning, including gesture, conceptual metaphor, conceptual blending, communities of practice, relational discourse and identity development. These research areas are pursued through qualitative analysis of video records of interactions between students, environment and teachers; quantitative analysis of standard conceptual and attitudinal surveys; and hybrid analysis of student-written and graphical artifacts. Graduate study in PER prepares students for careers in K-14 science education and further graduate study in a doctoral program in either physics or education.
3. Other research groups focus on instrumentation development and theory. Theoretical focus is on the study of the physical properties of materials through computational simulations, either using first principles methods from density functional theory or approximation methods within the effective mass theory, with an emphasis on semiconductors and oxides.
4. A final research area consists of computational modeling of historical events in astronomy.

Admission Policy
Regular Admission
Unconditional admission is usually given to students who meet the university's requirements for regular admission of a 2.75 GPA on the last 60 undergraduate hours of course work and who have a 3.0 GPA or better for upper-division undergraduate physics courses and who have earned course credit for upper-division courses in modern physics, mathematical physics or its equivalent, classical mechanics, electromagnetic field theory and quantum mechanics. If applicants have a GPA below 3.0 on junior and senior level physics courses as described above and have taken the Graduate Record Exam (GRE) prior to admission with a preferred score of 302, they may be considered for admission.

Conditional Admission
Students who meet the above expectations except for credit in course work for one of the areas specified may be granted conditional admission with the requirement of assigned background course work to make up the deficiency.

Exceptions
Students not meeting the criteria for regular admission or conditional admission stated above but who do meet the university’s requirements for regular admission may petition the department for admission.

Application Process
Each applicant must submit the following to The Graduate College:
• the online Graduate College application through ApplyTexas
• application fee
• one official transcript from each senior-level, post-secondary institution attended
• three references with names and contact information
• three letters of recommendation
• statement of purpose
• résumé/vita

Visit www.gradcollege.txstate.edu/apply for access to an online application and additional details. Applications are due June 15 (June 1) for U.S. citizens (international students) for the fall semester and October 15 (October 1) for U.S. citizens (international students) for the spring semester. Applicants interested in an assistantship are encouraged to apply early. A priority deadline of February 15 is set for the fall semester for applicants who want to compete in various Texas State scholar and fellowship competitions.

Financial Assistance
A limited number of instructional assistantships are available for graduate students. Research assistantships are also available. A waiver of out-of-state tuition is provided with both positions. Contact the graduate advisor in the Department of Physics for more information.

For details on scholarships, financial aid and application deadlines, visit The Graduate College website at www.gradcollege.txstate.edu and click on Financing Your Graduate Education. Please note that program admission priority deadlines must be met to be considered for scholarships, fellowships and assistantships.

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