

Courses of Instruction

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Course and Subject Guide

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Department of Geography

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Paul Hudak, Chair

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Students in the Department of Geography successfully prepare for active careers in diverse employment settings in business, government, research and teaching. The Master of Science degree with a major in applied geography allows students to develop their education and training in both physical and human geography, through a broad curriculum, research and teaching experience, and also through numerous internship opportunities with local corporations, water and land use agencies, and health care systems, as well as city, state and federal governments and agencies. The MS degree prepares graduates for mid-upper level entry positions as well as for pursuit of a doctoral degree in geography or an allied discipline. Formal interactions with the research and teaching faculties of environmental sciences and the Texas College of Osteopathic Medicine promote substantial crossover between disciplines for students in both programs. The master’s degree is also earned by many students that teach or plan to teach at the primary or secondary level. Inclusion of UNT’s archaeology curriculum in this department enables students to gain interdisciplinary training, with emphasis on geoarchaeology, zooarchaeology, spatial and quantitative analysis, and various techniques for dating or materials characterization.

Research

Faculty in the Department of Geography are engaged in research activities that cover a broad range of topics in physical and human geography, as well as archaeology. This diversity of research reflects the composition of our faculty. The department collaborates fully with the Institute of Applied Sciences, the Department of Mathematics, the Department of Computer Science and Engineering and the Department of Physics, among others, in interdisciplinary projects.

Research areas include medical geography and health care delivery systems, groundwater monitoring and remediation, solid waste disposal, water resources management, locational conflicts, urban/economic geography, geographic information systems, remote sensing and digital image processing, meteorology, environmental modeling, ecosystems management, coastal and fluvial geomorphology, soils geomorphology, climate modeling, Quaternary geology and paleoenvironments, geoarchaeology, environmental archaeology, island biogeography, zooarchaeology, spatial modeling and spatial/environmental aspects of recreation, cultural resources management and natural hazard assessment. In addition to research activities in the southern mid-continent region, students have recently participated in our faculty’s research in South America, the Caribbean, New Zealand, Thailand, Portugal, Spain, Mexico, Ghana and the Republic of Georgia.

Recent support for research includes grants from the National Science Foundation, the Environmental Protection Agency, the U.S. Army Corps of Engineers, the Texas Natural Resources Information Service, the Texas Air Quality Control Board, the National Geographic Society and the Leakey Foundation.

The **Center for Spatial Analysis and Mapping (CSAM)** is housed in the Environmental Education, Science and Technology Building (EESAT). This center provides instructional and research support in the areas of geographic information systems (GIS), computer cartography, spatial analysis and environmental modeling. The facility serves undergraduate and graduate students majoring in geography and in environmental science. Beyond its immediate instructional and research mission, CSAM is envisioned as the facility to provide GIS support for institutional planning and facilities management at UNT. The department also collaborates with environmental sciences in the operation of the Center for Remote Sensing and Land Use Analysis for instruction and research.

The **Center for Environmental Archaeology** maintains fully equipped laboratories in archaeology, geoarchaeology and zooarchaeology. These facilities

include instrumentation for analysis of sediments, soils, petrographic thin sections, lithic and ceramic artifacts. The zooarchaeology laboratory houses more than 700 curated skeletons of recent vertebrates as well as large collections of Holocene and Pleistocene archaeological faunas. Extensive research includes current projects of Upper and Middle Paleolithic sites in Portugal and Ukraine, the 1.8 million year-old site of Dmanisi in the Republic of Georgia and numerous sites dealing with the human colonization of New Zealand.

Degree Program

The department offers a graduate program leading to the following degree:

- Master of Science with a major in applied geography.

Admission Requirements

Application for admission to the Toulouse School of Graduate Studies is made through the graduate school. Concurrently, a letter of intent should be sent directly to the Department of Geography's graduate adviser. This letter should briefly summarize the applicant's background, specific interests in the field of geography and future career plans. Three letters of recommendation also are required.

Applicants normally should have the equivalent of an undergraduate major in geography from an accredited university with an overall undergraduate grade point average (GPA) of at least 2.8 or a 3.0 GPA during the last 60 undergraduate semester hours. The undergraduate degree should include exposure to basic quantitative analysis techniques in geography. Students whose undergraduate major is not geography may be required to take undergraduate leveling courses. Total leveling course requirements will not exceed 9 semester credit hours. In addition, the student's GRE score will be evaluated as part of the admission process. Contact the department or the Toulouse School of Graduate Studies for information concerning acceptable admission test scores.

Degree Programs

The Master of Science degree with a major in applied geography has a minimum requirement of 36 hours of academic credit, which includes either 6 hours for thesis preparation, or 6–9 hours of individual study and/or internships for non-thesis options. Students using the thesis option must defend their completed thesis, while those in the non-thesis option must pass a final examination. All students must take a 1-hour graduate seminar and two 3-hour research techniques courses: GEOG 5110, Research Design

and Geographic Applications, and GEOG 5190, Advanced Quantitative Techniques. Also, students must complete 6 hours of work in a cognate field unless they elect to follow the environmental archaeology track. For the remaining course work, selections may be made from any or all of six topical areas: geomorphology, geographic information systems (GIS) and techniques, water resources, urban environments, medical geography and archaeology. Individual student's degree plans and the composition of the student's committee are defined in the first term/semester of attendance in consultation with the student's major professor and the graduate adviser. Final written examinations are taken at the end of course work, including internships, for non-thesis students. An oral defense of the thesis is administered after the major professor and the thesis committee members have approved the written version of the thesis. As an option, students may elect to follow one of the specific degree tracks currently offered: applied geomorphology, environmental archaeology, urban environments management, water resources management or applied GIS.

Applied Geomorphology

This track prepares geography students for careers or further education in a wide variety of areas concerned with processes that shape the surface of the earth. Applied geomorphology emphasizes geomorphological processes that are of societal significance, including hazards such as flooding, expansive soils, landslides and coastal erosion. This track under the Master of Science with a major in Applied Geography enables students to structure their degree plans around conceptual and technical aspects of applied geomorphology. The track meets all existing requirements for the degree including required courses in research design, quantitative techniques and a cognate field. Students completing this track may find employment with government research and regulatory agencies, municipalities, planning organizations, water supply districts or environmental consulting firms.

Environmental Archaeology

Archaeology faculty in the geography department, in cooperation with the graduate program in anthropology, direct graduate students in pursuit of either the MS in geography or the MS in interdisciplinary studies. The focus of this program is to give students a strong foundation in selected areas of research expertise that will prepare them for entry into research positions or doctoral programs in archaeology. Two principal areas of training are geoarchaeology and zooarchaeology, which derive strength from the faculty and fine laboratory/collections resources in the Center for Environmental Archaeology. In addition to

core requirements in geoarchaeology or zooarchaeology, students complete two areas of specialization selected from the following areas: GIS and remote sensing, spatial and quantitative analysis, instrumental techniques (e.g., SEM, EDX, PIXE, stable isotopes, petrography), or zoology and ecology.

Urban Environments Management

This degree track prepares students to assume a vital role within the structure of a city government, coordinating the activities of various city departments related to environmental legislation. In addition to the normal requirements, students select courses from content areas including urban environments, environmental science, city government structure and environmental law and policy. Each student completes an internship with a local city, using that experience as a focus for preparation of the thesis. This track has been developed in response to the increasing need for persons to coordinate different programs in city government, to liaison with governmental agencies, to interact with contracted environmental engineers and to bring a philosophy of sustainable environments to the planning process.

Water Resources Management

This track prepares geography students to assume active roles in addressing the critical issues of water supplies and water quality. Students follow a curriculum balanced among technical, scientific and political aspects of water resources management, preparing them to complete either a thesis or an internship. Courses are selected from the following topical areas: techniques, geography/geology, environmental science and environmental policy. Students completing this degree track gain positions with local and regional governments, federal and state regulatory agencies, engineering firms and regional water districts.

Applied Geographic Information Systems

This track prepares students to meet the growing demand for GIS professionals. But rather than a strictly technical preparation, students acquire the foundation in applied geography that qualifies them to play vital roles in planning, policy and implementation in chosen areas such as urban geography, economic/business development, environmental science and medical geography. Courses for this track are selected from the following groups: GIS technology, GIS applications, topics/cognate fields, real estate/marketing, public health administration, environmental science and applied economics.

Certification in GIS

A five-course sequence fulfills the requirements for certification in GIS. These courses are Introduction to GIS, Intermediate GIS, Advanced GIS

and two applications-based electives from a list of geography and computer science courses. This certification may be acquired within the MS in geography, but is also open to graduate students in other programs, non-degree seeking students, or outside teachers or professionals who wish to add GIS capabilities to their present careers.

Financial Assistance

The Department of Geography extends some form of financial assistance to the majority of our graduate students. Our substantial enrollments in undergraduate introductory classes in geography, geology and archaeology support several teaching assistants. In addition, we offer students research assistantships and departmental scholarships. Many of these forms of assistance qualify students for an out-of-state tuition waiver, significantly reducing the student's education costs. The department also works closely with the office of student financial assistance and the international studies office to help students gain scholarships, student loans and other forms of assistance.

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