

Geography

*Master of Arts
Doctor of Philosophy*

For More Information

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Facilities for Graduate Work

The teaching and research facilities of the Department of Geography and the Environment are housed in Patton Hall, home to other liberal arts programs and departments. There are also research labs in the adjacent Student Activities Center.

Digital Landscape Laboratory. The Digital Landscape Laboratory is a GIS and remote sensing facility designed to support research in the modeling and characterizing of Earth's varied processes through geomorphology, biogeography, and landscape ecology. The laboratory includes a server, high-speed Ethernet connections, Windows-based workstations, scanners, and a large-format plotter.

Environmental Analysis Laboratories. The Soils and Geoarchaeology Laboratory, the Laboratory of Soils and Sediments, the Geosciences Laboratory, and the Environmental Hydrology and Water Quality Laboratory are equipped for field study and laboratory analysis of soils, sediments, pollen, water, fluvial and lake systems, and archaeological materials. Used as research facilities, these laboratories are integral to graduate study in geomorphology, paleoecology, hydrology, biogeography and cultural ecology, morphodynamics, and geoarchaeology. High technology equipment includes a laser granulometer, an X-ray fluorescence analyzer, magnetic susceptibility meters, 210Pb dating by alpha spectroscopy, an Acoustic Doppler Current Profiler (ADCP), a digital echosound coupled to a DGPS system, a dual frequency Stratabox for geophysics surveys, microscopes, samplers, mechanical augers, a vibracorer, spectrophotometers, and other water quality multi-analyzers, among other equipment. Two small boats and two outboard engines are available for research in rivers, lakes, and dams. Additionally, there is a dedicated environmental geoscience classroom for hands-on laboratory learning.

Environmental Information Systems Laboratory. This laboratory provides comprehensive resources for learning and research in cartography, geographic information systems (GIS), remote sensing, and spatial statistics. It contains 25 microcomputers connected by Ethernet to the campus network and the Internet. The laboratory is also equipped with scanners, digitizers, plotters, GPS receivers, a station for field mapping, and audiovisual equipment for hypermedia production. The computers run a variety of software for microcomputer mapping and GIS, remote sensing, computer-assisted drafting, and statistical analysis.

Geospatial Intelligent Sensing and Mapping Laboratory. The GISense Lab is equipped with advanced computing resources designed to manage large-scale geographic datasets and tackle complex geographic challenges. The laboratory boasts a suite of high-performance computing servers with GPUs for intensive geographic data processing and AI-driven geospatial research. These computing resources, along with GIS and cartography software, enable advanced spatial analyses

and high-level cartographic production. The computational resources support machine learning and advanced geospatial computations, facilitating cutting-edge research across various fields, including urban planning, environmental science, public health, and social sciences and humanities.

Lidar and Landscapes of the Ancient Mediterranean and Americas (LLAMA) Lab. This laboratory provides high-powered workstations for processing large lidar datasets, especially for projects focused on the ancient cultures of Mesoamerica and the Mediterranean. Three of the lab's six workstations are equipped to handle deep learning and AI-related processing. Additional lab resources include a 36" plotter and scanner, a large format laminator to produce field maps, Spectra SP20 GPS receivers, and a Topcon total station. The lab also maintains a comprehensive library of archaeological reports from the Maya Lowlands and GIS and remote sensing reference texts. A number of specialized software packages like Golden Surfer and GeoCue LP360 are installed on some workstations in addition to university licensed and open source geospatial software.

Spatially Explicit Artificial Intelligence Lab (SEAI Lab). SEAI Lab aims to develop spatially explicit AI models. The idea is redesigning and developing better AI and ML models for consuming spatial information in various geospatial tasks by incorporating spatial knowledge and spatial inductive bias such as spatial heterogeneity, spatial autocorrelation, map projection, and so on.

Spatial Justice Lab. The Spatial Justice Lab in the Department of Geography and the Environment brings together undergraduates, graduates, postdocs and faculty conducting research on the relationship between power and place. We engage critical geographic approaches including: feminist, post- and decolonial, intersectional, political economy and political ecology strands of theory to examine urgent issues of environmental and climate justice. Our members center qualitative, ethnographic methodologies but may also integrate critical cartography, remote sensing, and varied forms of land use science. We are a collaborative, co-managed peer mentoring space. Our members work towards independent undergraduate theses or capstone projects, MA and doctoral projects, book projects and article-based outputs. In concert, we center professional development for junior academics, mentoring around grant proposals, publishing, conference presentation, grad school and academic job market applications, and protecting sustainable work life balance for a fun and prosperous working life course.

University Libraries. The University Libraries are noted for their collections on Latin America, the Middle East, South Asia, and the American West.

Special research, training, and financial aid opportunities are available through area studies centers and research institutes in African and African American studies; Australian studies; East Asian studies; Latin American studies; Middle Eastern studies; Russian, East European, and Eurasian studies; and South Asian studies. Language training is available in Arabic, Bengali, Chinese, Hebrew, Hindi, Japanese, Korean, Malayalam, Persian, Sanskrit, Serbian/Croatian, Tamil, Telugu, Turkish, Urdu, Yoruba, and all major European languages. Additional University research facilities used by graduate students in the Department of Geography and the Environment include the Bureau of Economic Geology, the Center for Energy and Environmental Resources, the Center for Research in Water Resources, the Center for Transportation Research, the Marine Science Institute, the Center for Space Research, and the Population Research Center.

Areas of Study

The graduate curriculum in geography enables students to obtain an understanding of the heritage and philosophical foundations of the discipline, of contemporary thought and practice in its various subfields, and of the theories, analytical tools, and techniques currently used in geographic research.

Faculty and graduate students have contributed in many ways to understanding and managing the earth's diverse cultural and physical environments, ranging from local to global scales across the full range of human history. Current clusters of faculty research include space, place, and social worlds; environmental changes and surface processes; and digital landscapes.

Faculty associated with the space, place, and social worlds cluster investigate how socio-cultural and political-economic processes such as urbanization, agricultural transformation, industrialization, poverty, health care, migration, and mediated communication interact to produce diverse socio-spatial realities across urban, regional, national, and global scales.

Faculty associated with the environmental changes and surface processes cluster study biotic, climatic, geomorphic, and anthropogenic factors and processes.

Faculty associated with the digital landscapes cluster explore the theoretical and applied issues associated with the acquisition, measurement, representation, analysis, simulation, and visualization of digital geographic information.

The faculty has a strong international orientation and is well prepared to guide students in research in Latin America, South Asia, Southern Africa, and Europe, as well as in the Southwestern and Western regions of the United States. The department encourages interdisciplinary and collaborative work that takes advantage of the University's extensive scholarly resources.

Graduate Studies Committee

The following faculty members served on the Graduate Studies Committee (GSC) in the spring 2025 semester.

Paul C Adams	Yuhao Kang
Eugenio Yatsuda Arima	Gregory W Knapp
Sheryl Luzzadder Beach	Gengchen Mai
Timothy Beach	Laurel Mei-Singh
Brenda Boonabaana	Jennifer A Miller
Mark Budolfson	Carlos E Ramos
Kelley A Crews	Bjorn Ingmunnn Sletto
William Doolittle	Amy Thompson
David J Eaton	Rebecca M Torres
Caroline Faria	Pavithra Vasudevan
Thomas Garrison	Kenneth R Young
Steven D Hoelscher	