GEOGRAPHICAL SCIENCES (GEOG)

Graduate Degree Program
College: Behavioral and Social Sciences

Abstract

The Department of Geographical Sciences offers graduate study leading to the five year, combined Bachelors of Science and Masters of Science in Geographical Sciences degrees.

The specific research specializations represented by the faculty include:

Human Dimensions of Global Change

Coupled Human and Natural Systems. The Department's ultimate research goal is to advance an integrated understanding of the coupled Earth system including spatially distributed human processes. Our research addresses both fundamental and applied issues in coupled human and natural systems, such as population, socio-economic development, consumption and production, poverty, climate impacts and adaptation, vulnerability and mitigation, as well as the examination of policy options and trade-offs on sustainability. Our scientists investigate both the human socio-economic system and the climate system, and their linkages.

Land Cover, Land Use Change

Land cover and land-use change is a key interface between human and natural systems. Our scientists are world leaders in the remote sensing of land-cover changes. This information is actively combined with human socio-economic data to study past land cover and land use change and to inform advanced modeling of spatially-explicit future scenarios. These methods are actively being used to simultaneously address social, economic, carbon, climate, biodiversity and other aspects of land-use changes. We develop agricultural monitoring systems and look at societal impacts, adaptions and vulnerability to fire, droughts, floods, desertification, and other catastrophic events.

Geospatial Information Sciences and Remote Sensing

Collecting and interpreting geospatial data is central to everything we do as geographers, whether on computers or in the field. From local events to multi-scale processes, our faculty are developing and applying advanced remote sensing capabilities and GI Science that will help us to develop the next generation of GI technologies and understanding of the world's geography. Our strengths include advanced computer modeling, scientific and geographic visualization, sensor calibration and design, image processing, geocomputing, spatial statistics, and semantic learning.

Carbon, Vegetation Dynamics and Landscape-scale Processes

The department carries out a broad array of research focused on monitoring vegetation dynamics, with a particular focus on mapping and studying human and natural disturbances and their landscape-scale impacts, as well as changes to the earth surface as a result of climate variability. This research involves integration of field-based research with remotely-sensed observations to address key scientific uncertainties. Alterations to the global carbon cycle are changing atmospheric composition and climate with implications for human well-being and a particular focus of our research is on monitoring and modeling the terrestrial carbon cycle with unprecedented sophistication and resolution.

Financial Assistance

Teaching Assistantships (TA) and Research Assistantships (RA) are available for Ph.D. students. Salaries start at $36,118 for a full time (20 hour/week) 12 month TA or GRA appointment, and include up to 10 credits of tuition remission per semester (as of 2026). Renewal for a second year and subsequent years are contingent on the availability of funds, job performance and evaluation, meeting academic benchmarks outlined in the Department's Ph.D. Handbooks (https://geog.umd.edu/sites/geog.umd.edu/files/PhDhandbook%202024-2025%20Final%20May%2030%202024.docx.pdf), and maintaining a 3.0 GPA or better. Funding is not available for students in the combined BS/MS program.

Contact

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Courses: GEOG

ADMISSIONS

General Requirements

- Statement of Purpose
- Transcript(s)
- TOEFL/IELTS/PTE (international graduate students (https://gradschool.umd.edu/admissions/english-language-proficiency-requirements/))

Program-Specific Requirements

- Statement of Purpose: Why you're choosing UMD and the Department, who you'd like to work with in our program.
- Unofficial Transcript(s) (the UMD Graduate School will ask you to send your official transcripts if you are offered admission)
- Letters of Recommendation (3)
- CV/Resume
- TOEFL/IELTS/PTE (international graduate students): UMD English Requirements (https://web.archive.org/web/20250113135750/https://gradschool.umd.edu/admissions/english-language-proficiency-requirements/).
- Publications/Presentations (submitted to the *Upload Requirements* section of the application)
- Writing Sample (uploaded to the *Upload Requirements* section of the application) (one required and up to two more optional for Ph.D. applicants.)
- Contacting Faculty: You will need a sponsor from the Department faculty for admission. You **must** select and contact a tenured or tenure track faculty member (https://web.archive.org/web/20250113135750/https://geog.umd.edu/people/professors/) with interests that parallel your own. Plan to make an appointment for an interview in person or via Zoom with at least one. **This is required as part of your application.**

- Description of Research/Work Experience
- Portfolio PDF Upload (optional)

The Department offers courses of study leading to the Ph.D. degree and the MPS (masters in professional studies in geospatial information sciences). The MPS program is administered separately and has different admission deadlines and requirements than the Ph.D. program. See the MPS GIS Program (https://geog.umd.edu/landing/Graduate/).

Ph.D. Program

The Department admits students to our doctoral program that have already completed a masters degree and exceptionally well qualified students who have only completed a bachelor's degree. Admitted students are required to either possess or shall develop a strong foundation in the discipline of Geography. Admission to the Ph.D. program is not limited to students with a Geography degree. Those with degrees in related disciplines such as environmental, physical or biological sciences, anthropology, economics, history and social science are encouraged to apply but may be required to undertake additional background study. Some knowledge of data processing and statistics is necessary for all applicants.

Applicants proposed program of study must clearly draw on the research strengths of existing faculty members. All applicants are strongly encouraged to contact individual faculty members (in person, by phone, or by email) to discuss their research interests and to identify potential advisors, as they will need a faculty to sponsor them for admission.

In general, the Department admits between 10-15 students each year into the Ph.D. program. Virtually all students accepted are fully-funded through assistantships and fellowships. While there is no longer a formal M.S. program, a terminal masters degree may be received for qualified students who are unable to complete the Ph.D. program.

Combined BS/MS Program

The Masters of Science degree is only earned through the Department's combined five year BS/MS program. The combined BS/MS program enables some of the better performing students pursuing an undergraduate Geographical Sciences major to earn both their BS and their MS in five years by counting up to 8 credits of their Geographical Sciences graduate courses towards both degrees, thus significantly reducing both the time and cost of earning both degrees.

Most students apply to the program at the end of their Junior year to begin graduate courses and be part of the program as of their Senior year. Admission into the program is strongly competitive. Students will be admitted with an undergraduate degree in Geographical Sciences, including those with an ENSP concentration in Geographical Sciences. Minimum requirements are: 3.5 GPA overall, three letters of recommendation, and a statement of research.

Applicants' proposed statement of research must clearly align with the research strengths of existing faculty members. All applicants are strongly encouraged to contact individual faculty members (in person, by phone, or by email) to discuss their research interests and to identify potential advisors, as they will need a faculty member to sponsor them for admission.

In general, the Department admits between 5-10 students each year into the combined BS/MS program. There is no Departmental funding available.

Application Deadlines

Type of Applicant	Fall Deadline
Domestic Applicants	
US Citizens and Permanent Residents	December 15, 2026
International Applicants	
F (student) or J (exchange visitor) visas; A, E, G, H, I and L visas and immigrants	December 15, 2026

RESOURCES AND LINKS:
Program Website: http://www.geog.umd.edu
Application Process: gradschool.umd.edu/admissions (https://gradschool.umd.edu/admissions/)

REQUIREMENTS

- Geographical Sciences, Doctor of Philosophy (Ph.D.) (https://academiccatalog.umd.edu/graduate/programs/geographical-sciences-geog/geographical-sciences-phd/)
- Geographical Sciences, Master of Science (M.S.) (https://academiccatalog.umd.edu/graduate/programs/geographical-sciences-geog/geographical-sciences-ms/)

FACILITIES AND SPECIAL RESOURCES

The Washington, D.C. metropolitan area is an exceptional location in which to pursue geographic research. Many national and international agencies are within a short distance of the campus, including the NASA Goddard Space Flight Center, the USDA Beltsville Agricultural Research Center, the National Archives, Bureau of the Census, National Institutes of Health, USGS, National Geospatial Imaging Agency, Smithsonian Institution, and NOAA. International and non-governmental agencies are located within easy reach, including the National Geographic Society, the Nature Conservancy, World Wildlife Fund, World Bank, and many others. Corporations, businesses and nonprofit organizations that use geographical applications are also well represented. Libraries on campus and nearby are unrivaled elsewhere in the world. The University is also located in a region of extraordinary geographic diversity, including two major urban centers (Baltimore and Washington, D.C.), and the superb, continuous section from the Appalachian mountains, through the Piedmont, Coastal Plain, and Chesapeake Bay to the Atlantic Coast.

Many opportunities exist for students to participate in externally funded research projects. Graduate students find these research programs a rich source of ideas for dissertations as well as providing opportunities to join projects as paid research assistants and, often, identifying openings for employment on completion of their studies.

The Department is housed in over 35,000 sq. ft. on the main College Park campus. Teaching laboratories include facilities for cartography, GIS, and the Turner laboratories dedicated to computer-based instruction, while other facilities needed for virtually any type of investigation are available through collaborations with other departments. There are two primary computer environments, namely PC and UNIX, with over 100 machines dedicated to teaching and graduate research. The research laboratories support UNIX, Linux, and high-end PC machines, including very high performance processors and peripherals and large volume RAID arrays. There are a large number of printers, magnetic disk farms, tape libraries, etc. An extensive range of software is available, including

satellite data processing, image analysis, and ESRI GIS packages. Field research, remote sensing, global positioning systems, and other types of equipment are available.