

## DEPARTMENT OF GEOGRAPHY AND GEOSCIENCES

### OVERVIEW

<https://www.uvm.edu/cas/geography>

Undergraduate and graduate students in the Department of Geography & Geosciences are travelers of the world, lovers of the outdoors, appreciators of diverse cultures, and close observers of our environs. Students and faculty have an insatiable curiosity for human behavior, the natural world, and their interconnectivity. The work of students and faculty in the department spans the physical, social, and human sciences, and Geography & Geosciences students pursue careers in fields as diverse as their passions.

Graduates go on to be scientists and scholars, humanitarians and government officials, environmental organizers and activists, innovators and business leaders. They are working around the globe today, tackling urgent challenges like climate change, biodiversity, natural disaster, human migration, and geopolitical conflict. Some are getting their hands dirty in the field and others are crafting public policy in the halls of Congress.

### MAJORS

#### GEOGRAPHY AND GEOSCIENCES MAJOR

Geography B.A.

### MINORS

#### GEOGRAPHY AND GEOSCIENCES MINORS

Geography Minor

Geospatial Technologies Minor

### GRADUATE

Geology M.S.

See the online Graduate Catalogue for more information

### Geography Courses

#### **GEOG 1010. Topics In: First-Year Seminar. 3 Credits.**

Intensive first-year seminar focused on specific themes and/or disciplinary perspectives. Emphasis on developing critical reading and writing skills, substantive revision, information literacy, and analytical thinking. First-year seminars are frequently organized to meet one of the disciplinary Catamount Core requirements. Topics vary by offering; periodic offering at intervals that may exceed four years. Catamount Core: WIL1.

#### **GEOG 1014. Topics In: FYS: Sustainability. 3 Credits.**

Intensive first-year seminar focused on specific themes and/or disciplinary perspectives. Emphasis on developing critical reading and writing skills, substantive revision, information literacy, and analytical thinking. First-year seminars are frequently organized to meet one of the disciplinary Catamount Core requirements. Topics vary by offering; periodic offering at intervals that may exceed four years. Catamount Core: SU, WIL1.

#### **GEOG 1020. Topics In: LASP Seminar. 3 Credits.**

Intensive course in a broad disciplinary area (humanities, social sciences, arts, or natural sciences). Part of an integrated first-year experience in which students take 2-4 classes exploring aesthetic, humanistic, social, linguistic, environmental, or scientific issues. May repeat for credit with different content. Topics vary by offering; periodic offering at intervals that may exceed four years. Co-requisite: Enrollment in the appropriate Liberal Arts Scholars Program. Catamount Core: WIL1.

#### **GEOG 1200. Weather, Climate & Landscapes. 3 Credits.**

Introduction to the fundamentals of weather, climate, landform evolution, and plant distribution using a systems approach. Focus on variation in processes over space and time. Catamount Core: N1.

#### **GEOG 1500. Geospatial Cncpt&Visualization. 0 or 3 Credits.**

Introduction to the quantitative and qualitative geospatial concepts and tools used in Cartography, Geographic Information Science (GISci), Remote Sensing, and geographic research. Data creation, analysis, and map design using existing digital map resources, topographic/satellite data, and alternative mapping methodologies.

#### **GEOG 1510. Imaging the Earth. 3 Credits.**

Geographic analysis and evaluation of aerial imagery produced by remote sensors (satellites, airplanes, drones) and its relationship to environmental problems in the social and physical sciences.

#### **GEOG 1760. Global Environments & Cultures. 3 Credits.**

Introduction to Geography from global, place-based, cultural, and socio-environmental perspectives. Catamount Core: D2, S1, SU.

#### **GEOG 1765. Place, Lndscpe, Environment VT. 3 Credits.**

Introduction to Vermont's physical geographies, environmental histories, and socio-environmental problems. The course also considers Vermont's global and regional connections.

#### **GEOG 1770. Geography/Race&Ethnicity in US. 3 Credits.**

Examination of the ways in which spatial and locational processes shape and are shaped by ethnic and racial identities, struggles, and relationships. Catamount Core: D1, S1.

#### **GEOG 1780. Society, Place, and Power. 3 Credits.**

An introduction to human geography: a spatial perspective on the study of population and migration, globalization, uneven economic development, geopolitics, cities and rural spaces, cultural meanings of place, and struggles for spatial justice. Catamount Core: S1, SU.

#### **GEOG 1990. Special Topics. 1-18 Credits.**

See Schedule of Courses for specific titles.

**GEOG 2205. Biogeography. 3 Credits.**

Examines geographic distribution of organisms, emphasizing the biotic and abiotic factors that explain temporal and spatial patterns of species, population, and community distributions. Prerequisite: GEOG 1200.

**GEOG 2230. Climatology: Concepts & Tools. 3 Credits.**

Quantitative analysis of the atmospheric-land-water processes that determine climate variability and change at the local to global scales. Historical and near real-time data manipulation via statistics, weather map interpretation, climate indices, modeling and remote sensing. Prerequisite: GEOG 1200.

**GEOG 2235. Geography of Water. 3 Credits.**

Examination of the spatial dimensions of water distribution from local to global scales, and the social, political, and economic dimensions of its use. Same as NR 2020. Catamount Core: SU.

**GEOG 2250. Global Environmental Change. 3 Credits.**

Explores changes in natural processes and anthropogenic activities that influence the atmosphere, hydrosphere, and biosphere individually and through interactions and feedbacks from a distinctly spatial perspective employed by physical geographers. Prerequisite: GEOG 1200 or ENSC 1010. Cross-listed with: ENSC 2480.

**GEOG 2510. Geog Info: Cncpts & Applic. 0 or 3 Credits.**

Systematic approach to important geographical concepts (including distance, shape, scale dispersion) structured around the use of Geographical Information Systems (GIS) as an analytical tool. May not be taken for credit concurrently with, or following receipt of, credit for NR 2430. Prerequisite: Minimum Sophomore standing. Catamount Core: QD.

**GEOG 2520. Remote Sensing. 0 or 3 Credits.**

Examinations of the earth's surface from aerial photographs and satellite imagery. Emphasis is on image interpretation, classification, change detection, multivariate analysis (e.g. principal components analysis). Prerequisite: Sophomore standing. Cross-listed with: NR 2460.

**GEOG 2550. Qualitative Research Methods. 3 Credits.**

Covers data collection, analysis, and representation techniques for qualitative data with emphasis on critical perspectives and cutting-edge practices, such as participatory mapping and mixed-methods approaches. Prerequisite: Minimum Sophomore standing. Catamount Core: WIL2.

**GEOG 2705. Geography of Africa. 3 Credits.**

The character and development of the contemporary cultural, economic, and political patterns of the area against the background of its physical and resource base. Prerequisite: GEOG 1760 or GEOG 1780.

**GEOG 2710. Geography of India. 3 Credits.**

Survey of India's physical diversity, historical evolution, colonial and postcolonial legacies, and geopolitical situations, especially as they relate to globalization, migration, environment, and security. Prerequisite: GEOG 1760 or GEOG 1780.

**GEOG 2715. The Circumpolar Arctic. 3 Credits.**

Examines the physical and human geography of the circumpolar Arctic. Prerequisite: GEOG 1200 or GEOG 1760.

**GEOG 2720. The US: Place, Power, Politics. 3 Credits.**

Study of the United States through diverse perspectives in Human Geography. Examines how race, class, and gender relations shape social and political landscapes in historical and contemporary contexts. Emphasizes social/environmental justice and geographic approaches to thinking about political power. Prerequisite: GEOG 1760 or GEOG 1780.

**GEOG 2730. International Field Studies. 3 Credits.**

Field course abroad. Intensive study of the geography of a country or region, with attention to related issues. Prerequisite: Minimum Sophomore standing.

**GEOG 2760. Rural Geography. 3 Credits.**

Global, national and local scale study of rural landscapes, cultures, social issues, and environmental concerns. Prerequisite: GEOG 1760 or GEOG 1780. Catamount Core: S1.

**GEOG 2762. Cultural Ecology. 3 Credits.**

Interrelationships of social groups and their natural environments and resource bases, with primary emphasis on nonindustrial cultures, examined from the perspectives of anthropology and geography. Prerequisite: GEOG 1760 or GEOG 1780.

**GEOG 2764. Vermont Field Studies. 3 Credits.**

Field course on a geographical theme (e.g. physical or regional geography) in the Burlington area or surrounding region. Prerequisite: GEOG 1760 or GEOG 1780.

**GEOG 2770. Geography of Development. 3 Credits.**

Issues of global inequality, modernization and environmental degradation with a focus on colonialism, postcolonialism, and displacement of people, livelihoods, and cultures by development processes. Prerequisite: GEOG 1760 or GEOG 1780. Catamount Core: D2, SU.

**GEOG 2772. Historical Geography. 3 Credits.**

Examination of the tools, techniques, and perspectives used in studying the historic development of places and landscapes. Vermont and other North American case studies. Prerequisite: GEOG 1760 or GEOG 1780 or HST 1615.

**GEOG 2774. Gender, Space & Environment. 3 Credits.**

Examination of the ways in which human relationships to both the built and the natural environment are mediated by gender. Prerequisite: Six hours in Geography or Gender, Sexuality, & Women's Studies.

**GEOG 2780. Political Ecology. 3 Credits.**

Human-environment interactions under globalization. The politics of using particular ideas of 'nature' for the benefit of some and to the detriment of others in spaces from local backyards to global contexts. Environmental movements and livelihoods. Prerequisites: GEOG 1760, GEOG 1780, or ENVS 1510; and ENSC 1010, ENVS 1500, GEOG 1200, GEOL 1050, GEOL 1400, or NR 2030.

**GEOG 2790. Urban Geography. 3 Credits.**

Analysis of the morphology, function and social structure of cities. Consideration of the nature, history and theories of urban growth and development. Prerequisite: GEOG 1760 or GEOG 1780.

**GEOG 2990. Special Topics. 1-18 Credits.**

See Schedule of Courses for specific titles.

**GEOG 3230. Topics in Climate & Water. 3 Credits.**

Analysis of regional climatology, paleoclimatology, hydroclimatological hazards, or fluvial geomorphology. Topics include droughts, severe weather, climate change, floods and floodplain management, mountain and lowland rivers. Topics vary by offering; periodic offering at intervals that may exceed four years. Prerequisites: Vary with course content; minimum Junior standing.

**GEOG 3250. Topics In Global Change. 3 Credits.**

Advanced offerings on topics related to past, present and future changes in the environment, including natural and human-induced changes in the atmosphere, hydrosphere and biosphere. Topics vary by offering; periodic offering at intervals that may exceed four years. Prerequisite: Vary with course content; Minimum Junior standing.

**GEOG 3505. Spatial Analysis. 3 Credits.**

Analysis of spatial pattern and interaction through quantitative statistical models; application of GIS to statistical modeling. Prerequisite: GEOG 1500 or GEOG 2510 or NR 2430 or ENSC 2300 or GEOL 2525.

**GEOG 3520. Topics in Remote Sensing. 3 Credits.**

Applied, capstone course; remote sensing techniques will be applied to atmospheric issues at varying temporal and spatial scales, as well as to quantifying the influence of topography, vegetation, and land-water boundaries. May be repeated for credit with different content. Topics vary by offering; periodic offering at intervals that may exceed four years. Prerequisites: GEOG 1200; GEOG 2230, GEOG 2520, or NR 2460 recommended.

**GEOG 3760. Topics in Human Env Interact. 3 Credits.**

Advanced offerings on various manifestations of social-environmental relationships. Possible topics include sustainable development, environmental justice, and urban ecology. Topics vary by offering; periodic offering at intervals that may exceed four years. Prerequisites: Vary with course content; Minimum Junior standing.

**GEOG 3770. Topics in Space, Power, Identity. 3 Credits.**

Advanced offerings on topics related to the spatial regulation and geographic construction of social identity, paying particular attention to race, gender, and sexuality. Topics vary by offering; periodic offering at intervals that may exceed four years. Prerequisites: Vary with course content; minimum Junior standing.

**GEOG 3780. Topics in Pol Econ & Ecology. 3 Credits.**

Advanced offerings in political ecology and political economy, particularly at global and regional scales. Possible topics include Third World economic restructuring, globalization, international environmental movements. May repeat for credit with different content. Topics vary by offering; periodic offering at intervals that may exceed four years. Prerequisites: Vary with course content; minimum Junior standing.

**GEOG 3790. Topics in Crit Urban & Soc Geog. 3 Credits.**

Advanced offerings in urban and critical social geography. Possible topics include social justice and the city, human rights, geographies of social control. Topics vary by offering; periodic offering at intervals that may exceed four years. Prerequisites: Vary with course content; minimum Junior standing.

**GEOG 3990. Special Topics. 1-18 Credits.**

See Schedule of Courses for specific titles.

**GEOG 3991. Internship. 1-18 Credits.**

On-site supervised work experience combined with a structured academic learning plan directed by a faculty member or a faculty-staff team in which a faculty member is the instructor of record, for which academic credit is awarded. Offered at department discretion.

**GEOG 3993. Independent Study. 1-18 Credits.**

A course which is tailored to fit the interests of a specific student, which occurs outside the traditional classroom/laboratory setting under the supervision of a faculty member, for which credit is awarded. Offered at department discretion.

**GEOG 3995. Undergraduate Research. 1-18 Credits.**

Undergraduate student work on individual or small team research projects under the supervision of a faculty member, for which credit is awarded. Offered at department discretion.

**GEOG 4990. Special Topics. 1-18 Credits.**

See Schedule of Courses for specific titles.

**GEOG 4994. Teaching Assistantship. 1-3 Credits.**

Undergraduate student service as a teaching assistant, usually in an introductory-level course in the discipline, for which credit is awarded. Offered at department discretion.

**GEOG 4996. Honors. 1-6 Credits.**

College honors thesis or other department/program honors, under the supervision of a faculty member. Offered at department discretion.

**Geology Courses****GEOL 1010. Topics In: First-Year Seminar. 3 Credits.**

Intensive first-year seminar focused on specific themes and/or disciplinary perspectives. Emphasis on developing critical reading and writing skills, substantive revision, information literacy, and analytical thinking. First-year seminars are frequently organized to meet one of the disciplinary Catamount Core requirements. Topics vary by offering; periodic offering at intervals that may exceed four years. Catamount Core: WIL1.

**GEOL 1020. Topics In: LASP Seminar. 0 or 4 Credits.**

Intensive course in a broad disciplinary area (humanities, social sciences, arts, or natural sciences). Part of an integrated first-year experience in which students take 2-4 classes exploring aesthetic, humanistic, social, linguistic, environmental, or scientific issues. May repeat for credit with different content. Topics vary by offering; periodic offering at intervals that may exceed four years. Co-requisite: Enrollment in the appropriate Liberal Arts Scholars Program. Catamount Core: WIL1.

**GEOL 1055. Topics in Intro to Geo. 3 Credits.**

Exploration of geological processes and concepts. May be repeated for credit with different content. Topics vary by offering; periodic offering at intervals that may exceed four years.

**GEOL 1400. Environmental Geology. 0 or 4 Credits.**

Introduction to geologic processes and materials pertinent to environmental problems: ground water movement, supply, and contamination, waste disposal, flooding, subsidence, and landslides. Local field trips. Designed for intended Natural Science majors. Catamount Core: N2.

**GEOL 1990. Special Topics. 1-18 Credits.**

See Schedule of Courses for specific titles.

**GEOL 2105. Earth Materials. 3 Credits.**

Exploration of the building blocks of the Earth (elements, minerals, and rocks) and their connection to the Earth's past, present, and possible sustainable future. No laboratory. May not be taken for credit concurrently with, or following receipt of, credit for GEOL 3105. Prerequisite: GEOL 1400 or Instructor permission. Catamount Core: N1, SU.

**GEOL 2400. Topics in Env't & Surface Geo. 3 Credits.**

Exploration of themes and concepts in environmental and surface geology. May repeat for credit with different content. Topics vary by offering; periodic offering at intervals that may exceed four years. Prerequisite: GEOL 1400.

**GEOL 2405. Environmental Geochemistry. 3 Credits.**

Application of many basic principles of chemistry to selected environmental problems in geosciences (e.g. acid mine drainage, carbon dynamics, weathering, and contaminant metal mobility). No laboratory. May not be taken for credit concurrently with, or following receipt of, credit for GEOL 3405. Prerequisite: CHEM 1400. Catamount Core: N1.

**GEOL 2525. Geocomputing. 3 Credits.**

Introduction to a variety of computing tools commonly used in sciences and geosciences in particular. Hands-on experience; real data are used to resolve specific problems. Prerequisite: Sophomore standing. Catamount Core: QD.

**GEOL 2990. Special Topics. 1-18 Credits.**

See Schedule of Courses for specific titles.

**GEOL 3105. Earth Materials w/lab. 0 or 4 Credits.**

Exploration of the building blocks of the Earth (elements, minerals, and rocks) and their connection to the Earth's past, present, and possible sustainable future. With laboratory. May not be taken for credit concurrently with, or following receipt of, credit for GEOL 2105. Prerequisite: GEOL 1400 or Instructor permission. Catamount Core: N2, SU.

**GEOL 3405. Environmental Geochem w/lab. 0 or 4 Credits.**

Application of many basic principles of chemistry to selected environmental problems in geosciences (e.g. acid mine drainage, carbon dynamics, weathering, and contaminant metal mobility). With laboratory. May not be taken for credit concurrently with, or following receipt of, credit for GEOL 2405. Prerequisite: CHEM 1400. Catamount Core: N2, OC.

**GEOL 3410. Geomorphology. 0 or 4 Credits.**

Examines, using lectures, labs, and field-based independent study research projects, processes which change Earth's surface and the history of landscape development. Considers fundamental geologic constraints on environmental problems. Prerequisite: GEOL 1400 or Instructor permission.

**GEOL 3515. Field Geology. 4 Credits.**

Geological evolution of western Vermont as seen through actual field mapping in the Burlington area. Specifically designed for sophomores majoring or minoring in Geology or related sciences. Prerequisite: GEOL 1400 or Instructor permission.

**GEOL 3990. Special Topics. 1-18 Credits.**

See Schedule of Courses for specific titles.

**GEOL 3991. Internship. 1-18 Credits.**

On-site supervised work experience combined with a structured academic learning plan directed by a faculty member or a faculty-staff team in which a faculty member is the instructor of record, for which academic credit is awarded. Offered at department discretion.

**GEOL 3993. Independent Study. 1-18 Credits.**

A course which is tailored to fit the interests of a specific student, which occurs outside the traditional classroom/laboratory setting under the supervision of a faculty member, for which credit is awarded. Offered at department discretion.

**GEOL 3995. Undergraduate Research. 1-18 Credits.**

Undergraduate student work on individual or small team research projects under the supervision of a faculty member, for which credit is awarded. Offered at department discretion.

**GEOL 4105. Structural Geology. 0 or 4 Credits.**

Examines processes and problems concerning the mechanical behavior of the Earth's crust and surface. Includes rock deformation stress, strain, and the interpretation of geological structures. Prerequisites: GEOL 3515, GEOL 2105.

**GEOL 4405. Geochemistry of Natural Waters. 3 Credits.**

Basic concepts of chemical equilibria applied to natural waters, including thermodynamics, pH, oxidation-reduction, weathering, and solution equilibria. Prerequisite: CHEM 1450. Catamount Core: N1, QD.

**GEOL 4990. Special Topics. 1-18 Credits.**

See Schedule of Courses for specific titles.

**GEOL 4994. Teaching Assistantship. 1-3 Credits.**

Undergraduate student service as a teaching assistant, usually in an introductory-level course in the discipline, for which credit is awarded. Offered at department discretion.

**GEOL 4996. Honors. 1-6 Credits.**

College honors thesis or other department/program honors, under the supervision of a faculty member. Offered at department discretion.