

# GEOGRAPHY (GPHY)

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## **GPHY 111N - Intro to Physical Geography: Climate, Landforms, and Vegetation. 3 Credits.**

Offered spring. Introduction to earth system science, the study of the earth's climate, surface processes, and ecosystems, and their distributions, functions, and interactions. Gen Ed Natural Science Course (N).

Gen Ed Attributes: Natural Science

## **GPHY 112N - Intro to Physical Geography Laboratory: Climate, Landforms, and Vegetation Lab. 1 Credit.**

Offered spring. Prereq. or coreq., GPHY 111N. Introduction to techniques and methods needed to understand and analyze data, graphs, maps, and images of the earth's climate, surface processes, and ecosystems, and their interactions. Prerequisites for GPHY 385. Gen Ed Natural Science Lab Course (N).

Gen Ed Attributes: Natural Science Lab Course, Natural Science

## **GPHY 121S - Human Geography. 3 Credits.**

Offered autumn and spring. Introduction to Human Geography focuses upon the linkages between geography and society including analysis of regions, ethnic groups, urban landscapes, migration and population change, geopolitics, economics, and cultural differences.

Gen Ed Attributes: Social Sciences, Cultural & International Diversity

## **GPHY 141S - Geography of World Regions. 3 Credits.**

Offered autumn and/or spring. An overall view of how the lands and peoples of the world are organized into coherent geographical regions, how landscapes differ from region to region, and how the people differ in terms of their traits, beliefs, ways of life, and economic livelihood.

Gen Ed Attributes: Social Sciences, Cultural & International Diversity

## **GPHY 241 - Montana. 3 Credits.**

Offered autumn. The physical, cultural, economic, political, and historical geography of the state including Montana's mountains and the prairies.

## **GPHY 245 - The Middle East. 3 Credits.**

Offered intermittently. A survey of the biophysical and cultural geography of Southwest Asia and North Africa. Emphasis on environmental change; prehistory; patterns of cultural and historical change; issues of socio-economic, religious, and political diversity; and the broader political significance of the region.

## **GPHY 284 - Intro to GIS and Cartography. 3 Credits.**

Offered every term. This course is designed as a practical introduction to the use of Geographic Information Systems (GIS) for storing, retrieving, analyzing and displaying spatial data. It will also cover the history of cartography and the conventions of the modern map-making process. Students need to register for a required lab section. Credit cannot be earned for both FORS 250 and GPHY 284.

## **GPHY 291 - Special Topics. 1-6 Credits.**

(R-6) Offered intermittently. Experimental offerings of visiting professors, experimental offerings of new courses, or one-time offerings of current topics.

## **GPHY 295 - Mountain Field Studies. 1 Credit.**

Offered autumn and spring as a series of one-credit courses, maximum of three-credits per semester. Field studies of Montana's Rocky Mountain Front, Crown of the Continent, or Yellowstone. Students prepare to conduct field work, spend time in the field observing wildlife, physical landscapes and cultural aspects of these landscapes, and follow up their observations in written reports.

## **GPHY 311N - Biogeography. 3 Credits.**

Offered intermittently. Changing patterns of plant and animal distributions in space and time. Combination of historical and ecological approaches to biological species and communities. Study of external causes of plant and animal distributions, especially climatic change and human impacts.

Gen Ed Attributes: Natural Science

## **GPHY 317 - Geomorphology. 3 Credits.**

Offered autumn even-numbered years. Prereq., GPHY 111N or GEO 101N. Important landforms and landscapes, their biophysical processes, and their formative elements.

## **GPHY 323S - Economic Geography of Rural Areas. 3 Credits.**

Offered spring odd-numbered years. Study of the location of economic activities, including agriculture, industry, and services. Focus on the changing nature of rural areas.

Gen Ed Attributes: Social Sciences

## **GPHY 335 - Water and Sustainability. 3 Credits.**

Offered autumn. Prereq., WRIT 101 or equivalent, and one intermediate writing course or consent of instructor. Geographical perspective on water resource issues and challenges facing the public, resource managers, and water users in the western United States. Examines concepts, terms, and regulatory environment which provide the foundation for sustainable water management and policy.

Gen Ed Attributes: Advanced Writing

## **GPHY 338 - Mountains and Society. 3 Credits.**

Offered spring. Physical and cultural aspects of the mountains of North and South America, Europe, Africa, and Asia. Emphasis on combining the physical landscape with an overview of the indigenous people who inhabit the worlds' heights.

## **GPHY 348 - Field Studies in Geography. 3 Credits.**

(R-12) Offered autumn and spring. Through extended backcountry travel, experiential examination of regional landforms, climate, hydrology, soils, and patterns of vegetation and wildlife. Local landscapes, natural-resource endowment, and societies with particular emphasis on human-environmental interaction. Geographical skills and techniques, including map reading and navigational skills. Offered by the Wild Rockies Field Institute as part of a semester-long, 12-credit field experience with corequisite courses in allied fields.

## **GPHY 378 - Preceptorship in Geography. 1-3 Credits.**

(R-6) Offered autumn and spring. Consent of instructor. Assisting a faculty member by tutoring, conducting review sessions, helping students with research projects, and carrying out other class-related responsibilities. Open to juniors and seniors who apply to instructor for consent.

## **GPHY 385 - Field Techniques. 3 Credits.**

Offered autumn and intermittently in spring. Prereq., GPHY 112N or Consent of Instructor. Field techniques used by geographers and planners in making field observations and in collecting data.

## **GPHY 391 - Special Topics. 1-12 Credits.**

(R-12) Offered intermittently. Experimental offerings of visiting professors, experimental offerings of new courses, or one-time offerings of current topics.

## **GPHY 392 - Independent Study. 1-9 Credits.**

(R-9) Offered every term. Consent of Instructor. Independent study in any subfield of geography.

**GPHY 395 - Field Studies. 1-9 Credits.**

(R-9) Offered fall and/or spring. Field experience in the region. Includes geographically relevant field courses offered as part of Swan Valley Connections' Landscape and Livelihood Field Semester, focusing on natural and human communities and on conservation solutions of the Southwest Crown of the Continent Region: Sustainability and Agriculture (3 cr), and Biogeography of Northwest Montana (4 cr).

**GPHY 400 - Geography Capstone. 1 Credit.**

Offered autumn. Prereq., Senior standing. Exploration of current research, projects, and programs of geographers and scientists/practitioners in allied disciplines and fields, and preparation of a professional portfolio. Student preparation for post-graduate professional and academic careers is emphasized. Level: Undergraduate

**GPHY 421 - Sustainable Cities. 3 Credits.**

Offered spring even-numbered years. Prereq., upper-division or graduate standing. A discussion of sustainability efforts in cities around the world. Topics include, for example, urban sprawl and smart growth, alternative energy, public transportation, integrated waste management, integrated water management, green architecture, and urban agriculture. Level: Undergraduate-Graduate

**GPHY 433 - Community Resilience. 3 Credits.**

Offered most springs. Prereq., WRIT 101 or equivalent, and one intermediate writing course. Examines human-environment relations and interactions. Topics include: human geographic perspectives on landscape, cultural ecology, political ecology, community resilience in relation to complex adaptive systems, and planning applications. Level: Undergraduate-Graduate

Gen Ed Attributes: Advanced Writing

**GPHY 465 - Planning Principles & Processes. 3 Credits.**

Offered autumn even-numbered years. Prereq., upper-division or graduate standing. Surveys planning principles, practices and issues in urban and rural environments. Attention is devoted to Montana, state planning programs in the United States., and federal programs and policies that influence land-use planning. Emphasizes skills and techniques used in plan development and implementation. Level: Undergraduate-Graduate

**GPHY 466 - Environmental Planning. 3 Credits.**

Offered autumn odd-numbered years. Introduction to practice of environmental planning which includes elements of physical planning, planning design at the landscape scale, and conservation planning. Includes field visits and project-based work. Level: Undergraduate-Graduate

**GPHY 468 - Community & Regional Analysis. 3 Credits.**

Offered autumn. Coreq., GPHY 469. Socio-demographic analysis of communities and regions: population, employment, and spatial interaction. Hands-on course designed for future planners, GIS analysts, and others interested in socio-demographic change. To succeed in this course students should have comfort with basic algebra. Level: Undergraduate-Graduate

**GPHY 469 - Planning & Analysis Laboratory. 1 Credit.**

Offered autumn. Coreq., GPHY 468. Laboratory to accompany GPHY 468. Level: Undergraduate-Graduate

**GPHY 474 - UAV Remote Sensing for Field Ecology. 3 Credits.**

Offered summer only at the Flathead Lake Biological Station. Prereq., FORS 250 or GPHY 284. This course will introduce students to field-based methods of close-range remote sensing in freshwater ecosystems. Students will gain knowledge of basic spatial analysis through GIS and remote sensing techniques. Students will learn basic applications of UAVs and Acoustic Doppler Profilers, two remote sensing instruments of fast-growing interest in ecological research and application. Students will learn about essentials to operate UAVs and ADPs, initial post-processing of data products and integrating these data into ecological research and application. Level: Undergraduate-Graduate

**GPHY 481 - Advanced Cartographic Design. 3 Credits.**

Offered autumn. Prereq., GPHY 284 or FORS 250 or Consent of Instructor. The course concentrates on the presentation of spatial data and the construction of cartographic products that have clear communication and excellent aesthetic design. The class meets the University's service learning course objectives through a semester long project where students consult with a client, design and construct a map, and deliver a final product. Level: Undergraduate-Graduate

**GPHY 482 - Spatial Analysis & GIS. 3 Credits.**

Offered intermittently. Prereq., GPHY 284 or FORS 250 or consent of instructor. Coreq., GPHY 489. Quantitative analysis of spatial data, including techniques for pattern analysis, classification, and interpolation within a GIS environment. Level: Undergraduate-Graduate

**GPHY 485 - Internet GIS. 3 Credits.**

Offered intermittently. Prereq., GPHY 284 or FORS 250 or Consent of Instructor. Principles and techniques for distributing GIS and mapping applications through the Internet. Students need to register for a required linked lab section. Level: Undergraduate-Graduate

**GPHY 486 - Transport, Planning & GIS. 2,3 Credits.**

Offered intermittently during wintersession (2 credits) or spring semester (3 credits.) Coreq., GPHY 489. A project-oriented course focusing on patterns and trends in urban passenger transportation, principles of transport planning, and modeling in GIS-T. To succeed in this course students should have comfort with basic algebra and statistics. Level: Undergraduate-Graduate

**GPHY 487 - Remote Sensing/Raster GIS. 3 Credits.**

Offered autumn. Prereq. or coreq., GPHY 284 or FORS 250 or Consent of Instructor. Coreq., GPHY 489. Basic principles of remote sensing and analyzing images within a raster GIS. Review current data sources. Level: Undergraduate-Graduate

**GPHY 488 - Applications of GIS. 3 Credits.**

Offered spring. Prereq., GPHY 284 or GPHY 381 or FORS 250 or Consent of Instructor. Application of GIS for managing natural and cultural resources. Covers choropleth maps, dot maps, proportional figure maps, isarithmic maps, and others. Includes computer mapping and GIS exercises. Students need to register for a required linked lab section. Level: Undergraduate-Graduate

**GPHY 489 - Cartography/GIS Laboratory. 1 Credit.**

(R-4) Offered autumn and spring. Prereq., or coreq., GPHY 482, 486 or 487. Lab to accompany cartography and GIS courses. Level: Undergraduate-Graduate

**GPHY 491 - Special Topics. 9 Credits.**

(R-9) Offered intermittently. Experimental offerings of visiting professors, experimental offerings of new courses, or one-time offerings of current topics. Level: Undergraduate-Graduate

**GPHY 492 - Independent Study. 1-9 Credits.**

(R-9) Offered every term. Consent of instructor. Independent study in any subfield of geography. Level: Undergraduate-Graduate

**GPHY 497 - Workshop in Teaching Geography. 2-3 Credits.**

Offered intermittently. Concepts and techniques in geography, with emphasis on their use in teaching geography in Montana schools. Students are required to prepare and present a teaching unit project. Designed for pre-service or in-service teachers. Level: Undergraduate-Graduate

**GPHY 498 - Internship. 1-6 Credits.**

Offered every term. Consent of instructor. Extended classroom experience which provides practical application of classroom learning during placements within governmental agencies or the business community. A maximum of 6 credits of Internship may count toward graduation. Level: Undergraduate

**GPHY 499 - Senior Thesis. 3 Credits.**

(R-6) Offered autumn and spring. Prereq., WRIT 101 or equivalent, and one intermediate writing course and senior standing and consent of instructor. Independent research project in any geographical topic supervised by a faculty member, and leading to completion of the baccalaureate degree. Level: Undergraduate  
Gen Ed Attributes: Advanced Writing

**GPHY 500 - Geography Graduate Colloquium. 1 Credit.**

(R-3) Offered autumn. Presentation of faculty and student research. Guest lecturers. Graded pass/not pass only. Enrollment required every autumn graduate students are in residence. Level: Graduate

**GPHY 504 - Research Design in the Geographical Sciences I. 1 Credit.**

Offered once a year. To be taken during first semester of graduate studies and in sequence with GPHY 505. Understanding of diverse research approaches in the geographical sciences and development of thesis project. To be taken during first year of graduate studies. Level: Graduate

**GPHY 505 - Research Design in Geographical Sciences II. 2 Credits.**

Offered once a year. Prereq., or coreq GPHY 504. Preparation of a thesis proposal: research design, data collection, analysis, interpretation, and presentation. Recommended to be taken during the first year of graduate studies. Level: Graduate

**GPHY 525 - Seminar in Paleoclimate. 3 Credits.**

Offered every other autumn. Covers the major controlling factors of climate through time, the variety of paleoclimate reconstruction methods, the range of impacts of climate on previous civilizations, and provides context for our current climate situation. Level: Graduate

**GPHY 550 - Seminar in Geography. 3 Credits.**

(R-9) Offered intermittently. Seminar topics in geography and society, human-environmental interaction, physical geography, regional geography, or geographical techniques. Level: Graduate

**GPHY 560 - Seminar in Planning. 3 Credits.**

Offered spring odd-numbered years. A critical analysis of land planning history, theory, approaches, and practice. Emphasis is on the United States and England. Level: Graduate

**GPHY 561 - Land Use Planning Law. 3 Credits.**

Offered autumn. Same as ENST 561 and LAW 687. Basic overview of the law of land-use planning including, background in the traditional governmental regulatory, proprietary, and fiscal land use tools. Examination of modern techniques for land-use planning; consideration of constitutional limits of the authority of state and local governments. Focus on skills in interpreting, drafting, and applying state legislation and local ordinances. Level: Graduate

**GPHY 562 - Land Use Planning Clinic. 1-6 Credits.**

(R-6) Offered every term. Prereq. or coreq., GPHY 561. Same as ENST 562. Students assist local communities in long-range planning efforts and development of growth management plans as required by Montana law; ordinance drafting, development proposals, and land use issues. Level: Graduate

**GPHY 564 - Planning Design. 3 Credits.**

Offered spring even-numbered years. Prereq., graduate standing or Consent of Instructor. Analysis of land-use problems and design. Level: Graduate

**GPHY 578 - Preceptorship in Geography. 1-3 Credits.**

(R-6) Offered autumn and spring. Graduate standing and Consent of Instructor. Assisting a faculty member by tutoring, helping students with research projects, and carrying out other class-related activities. Level: Graduate

**GPHY 580 - Seminar GIS & Cartography. 3 Credits.**

(R-9) Offered every two years. Seminar topics in cartography and GIS. Applications to advanced studies in human and physical geography. Level: Graduate

**GPHY 587 - Image Analysis & Modeling. 3 Credits.**

Offered every two years. Prereq., GPHY 487 or FORS 351 or Consent of instructor; coreq., GPHY 589. Advanced topics in image analysis (e.g. hyperspectral images and pattern-recognition-based classification) and foundations of simple raster-based models. Level: Graduate

**GPHY 589 - Cartography/GIS Laboratory. 1 Credit.**

(R-4) Offered autumn and spring. Laboratory to accompany GPHY 587 or 588. Level: Graduate

**GPHY 595 - Special Topics. 1-8 Credits.**

(R-9) Offered intermittently. Prereq., Consent of Instructor. Experimental offerings of visiting professors, experimental offerings of new courses, or one-time offerings of current topics. Level: Graduate

**GPHY 596 - Independent Study. 1-9 Credits.**

(R-9) Offered every term. Graduate standing and consent of instructor. Independent research in geography or planning. Level: Graduate

**GPHY 597 - Professional Paper. 1-6 Credits.**

(R-6) Offered autumn and spring. Graduate standing in Geography and Consent of Advisor. Level: Graduate

**GPHY 598 - Internship. 1-9 Credits.**

(R-9) Offered every term. Graduate standing and consent of instructor. Extended classroom experience which provides practical application of classroom learning during placements off campus. Level: Graduate

**GPHY 599 - Thesis. 1-6 Credits.**

Offered every term. Graduate standing in Geography and Consent of Advisor. Level: Graduate