

# DEPARTMENT OF GEOGRAPHY

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Geography is the systematic study of the spatial aspects of human activity, the natural world, and human-environment interaction. The discipline of Geography occupies a unique position as a bridge between the social sciences (Human Geography), natural sciences (Physical Geography), and STEM fields (GIScience). As a result, the Geography Department offers both a Bachelor of Arts (B.A.) and Bachelor of Science (B.S.) degree. Both degrees offer students broad exposure to the various subfields of Geography and provide specialized career training and preparation. From this interdisciplinary perspective, Geography helps us understand and address numerous contemporary challenges ranging from economic development, urban planning, and ethnic conflict to climate change, environmental sustainability, and natural resource management. Geography is a rapidly expanding discipline with diverse career opportunities across the environmental sciences, social sciences, and technological fields in both the public and private sectors.

The Geography Department prepares students to succeed as professionals in today's job market through an innovative curriculum focusing on building critical thinking, technical expertise, and practical skills across a range of Human Geography, Physical Geography, and Geospatial Information Science (GIScience) courses. The curriculum includes a mixture of classroom and lab instruction, hands-on projects, and professional internship experiences that actively engage students in the learning process and provide the skills necessary for life-long learning. The Department maintains state-of-the-art facilities, including technology-enhanced classrooms, a Physical Geography lab, and a GIScience computer lab supporting students as they utilize the latest software and hardware. The Department provides a supportive learning environment where students work closely with faculty and peers while enjoying numerous opportunities to participate in campus, state, and national professional activities.

Geography alumni have successfully applied their knowledge and practical skills in a variety of career paths in both the public and private sectors, including urban and regional planning, economic development, environmental science, natural resource and energy management, weather forecasting, emergency response and homeland security, GIScience analysis, and education. Other alumni have continued with Geography studies at the graduate level. The Department also offers an Accelerated Master's program which allows qualifying students to begin earning graduate student credit during their senior year.

All Geography majors are required to earn a C or better in their Geography courses if those hours are to count toward the major requirements.

## Programs

- Geography M.A., Accelerated Graduate Degree (<http://catalog.marshall.edu/undergraduate/programs-az/liberal-arts/geography/geography-ma-accelerated-graduate-degree/>)
- Geography M.S., Accelerated Graduate Degree (<http://catalog.marshall.edu/undergraduate/programs-az/liberal-arts/geography/geography-ms-accelerated-graduate-degree/>)
- Geography, B.A. (<http://catalog.marshall.edu/undergraduate/programs-az/liberal-arts/geography/geography-ba/>)
- Geography, B.S. (<http://catalog.marshall.edu/undergraduate/programs-az/liberal-arts/geography/geography-bs/>)
- Geography, Minor (<http://catalog.marshall.edu/undergraduate/programs-az/liberal-arts/geography/geography-minor/>)
- Geospatial Information Science, Certificate (<http://catalog.marshall.edu/undergraduate/programs-az/liberal-arts/geography/geospatial-information-science-certificate/>)
- Geospatial Information Science, Minor (<http://catalog.marshall.edu/undergraduate/programs-az/liberal-arts/geography/geospatial-information-science-minor/>)
- Meteorology, Certificate (<http://catalog.marshall.edu/undergraduate/programs-az/liberal-arts/geography/meteorology-certificate/>)
- Meteorology, Minor (<http://catalog.marshall.edu/undergraduate/programs-az/liberal-arts/geography/meteorology-minor/>)

## Courses

 - General Education Course

### **GEO 100 Intro to Human Geography (CT) 3 Credit hours**

This critical thinking course provides a systematic examination of contemporary concepts and processes of human geography in global perspective, including economics, geopolitics, culture, nationalism, urbanization, governance, agriculture, population, and migration.

**Attributes:** Critical Thinking, International, Core II Social Sciences  
**Grade Mode:** Normal Grading Mode

### **GEO 101 Physical Geography (CT) 4 Credit hours**

Systematic survey of earth-sun relationships, land-surface form, climate, soils, water, natural vegetation, and other natural content as a background for human geography.

**Attributes:** Critical Thinking, Natural Sciences  
**Grade Mode:** Normal Grading Mode

### **GEO 110 Basic GIS 1 Credit hour**

Introduction to GIS concepts including GIS components, spatial and tabular data, database elements, data formats, and map design; hands-on experience with a GIS.

**Attributes:** Digital Humanities  
**Grade Mode:** Normal Grading Mode

### **GEO 111 Air Photos & Satellite Imagery 1 Credit hour**

Introduction to photogrammetry and remote sensing through the hands-on investigation of aerial photographs and satellite imagery using the latest technology.

**Attributes:** Digital Humanities  
**Grade Mode:** Normal Grading Mode

<b>GEO 112 Smartphone GPS</b>	<b>1 Credit hour</b>	<b>GEO 300 Methods in Geography</b>	<b>3 Credit hours</b>
Principles of Global Navigation Satellite Systems (GNSS); using your smartphone for Global Positioning Systems (GPS)/GNSS orientation, and data collection.		Provides an introduction to research methods in geography. Topics addressed include: data sources; sampling; data collection, storage, and management; descriptive measures and data visualization techniques; qualitative and quantitative analysis.	
<b>Attributes:</b> Digital Humanities		<b>Pre-req:</b> STA 225 with a minimum grade of D or STA 150 with a minimum grade of D or STA 150B with a minimum grade of D or MGT 218 with a minimum grade of D or PSY 223 with a minimum grade of D or SOC 345 with a minimum grade of D or GEO 440 with a minimum grade of D.	
<b>Grade Mode:</b> Normal Grading Mode		<b>Grade Mode:</b> Normal Grading Mode	
<b>GEO 113 Web GIS</b>	<b>1 Credit hour</b>	<b>GEO 305 🌳 Geog of USA &amp; Canada</b>	<b>3 Credit hours</b>
Students learn to build web maps, share GIS data on the internet, and create web GIS applications.		Survey of physical, historical, population, economic, political, cultural, and regional geographies of Canada and the United States, including an analysis of the multi-cultural nature of the societies.	
<b>Attributes:</b> Digital Humanities		<b>Attributes:</b> American Institutions, Multicultural	
<b>Grade Mode:</b> Normal Grading Mode		<b>Grade Mode:</b> Normal Grading Mode	
<b>GEO 203 🌳 Economic Geography (CT)</b>	<b>3 Credit hours</b>	<b>GEO 317 🌳 World Regional Geography</b>	<b>3 Credit hours</b>
A systematic examination of world economic geography with a focus on population, agriculture, transportation, land use, urbanization, industry, energy, and the environment.		World regions examined using a synthesis of physical and human geographical themes including environment, culture, landscape, climate, landforms, globalization, population patterns, urbanization, economies, and political geography.	
<b>Attributes:</b> Critical Thinking, International, Core II Social Sciences		<b>Attributes:</b> International	
<b>Grade Mode:</b> Normal Grading Mode		<b>Grade Mode:</b> Normal Grading Mode	
<b>GEO 206 🌳 Geography West Virginia</b>	<b>3 Credit hours</b>	<b>GEO 350 Severe Storms and Natl Hzrds</b>	<b>4 Credit hours</b>
A survey of the geography of West Virginia including landforms, climate, settlement patterns, population, economics, resources, politics, and environmental changes.		Basics of earth and atmospheric hazards including flooding, earthquakes, tsunamis, hurricanes, tornadoes, and volcanic eruptions, and how to mitigate the impacts.	
<b>Attributes:</b> American Institutions, Core II Social Sciences		<b>Grade Mode:</b> Normal Grading Mode	
<b>Grade Mode:</b> Normal Grading Mode		<b>GEO 355 Aviation Weather</b>	<b>3 Credit hours</b>
<b>GEO 207 🌳 Biblical Geography</b>	<b>3 Credit hours</b>	A study of atmospheric conditions on aeronautical operations.	
Students explore the physical and human geography of ancient Palestine and assess how geography informs our understanding of people, events, and places described by Jewish and Christian scriptures.		Topics include atmospheric properties, aviation hazards including thunderstorms, wind shear, turbulence, and icing, and weather flight resources.	
<b>Attributes:</b> Core II Humanities		<b>Pre-req:</b> GEO 230 with a minimum grade of D.	
<b>Grade Mode:</b> Normal Grading Mode		<b>Grade Mode:</b> Normal Grading Mode	
<b>GEO 222 🌳 Global Environment Issues (CT)</b>	<b>3 Credit hours</b>	<b>GEO 402 Geography of Appalachia</b>	<b>3 Credit hours</b>
Environmental issues have great emotional, political, and economic significance. The dynamics of global environmental problems, their complex interactions, and effects on potential stakeholders will be examined at the international scale.		A study of the geography of Appalachia, including landforms, climate, settlement patterns, population, economics, resources, politics, and environmental changes.	
<b>Attributes:</b> Critical Thinking, International, Core II Social Sciences		<b>Attributes:</b> American Institutions	
<b>Grade Mode:</b> Normal Grading Mode		<b>Grade Mode:</b> Normal Grading Mode	
<b>GEO 223 Digital Earth</b>	<b>4 Credit hours</b>	<b>GEO 404 🌳 Geography of Europe</b>	<b>3 Credit hours</b>
Students employ GIS, GPS, Remote Sensing, and Drones for spatial data collection and analysis and investigate how the tools function for studying human and physical Earth systems.		An examination of the geography of Europe focusing on contemporary issues, including climate, culture, economics, environmental change, everyday life, international relations landforms, language, politics, population, religion, and urbanization.	
<b>Grade Mode:</b> Normal Grading Mode		<b>Attributes:</b> International	
<b>GEO 230 🌳 Intro to Meteorology (CT)</b>	<b>4 Credit hours</b>	<b>Grade Mode:</b> Normal Grading Mode	
Introduction to the composition of the atmosphere and weather phenomena, including thunderstorms, tornadoes, and hurricanes.		<b>GEO 405 🌳 Political Geography</b>	<b>3 Credit hours</b>
<b>Attributes:</b> Critical Thinking, Core II Natural Sciences		A systematic and regional survey of world political problems and international relations stressing current geopolitical conflicts.	
<b>Grade Mode:</b> Normal Grading Mode		<b>Attributes:</b> International	
<b>GEO 280 Special Topics</b>	<b>1-4 Credit hours</b>	<b>Grade Mode:</b> Normal Grading Mode	
<b>Grade Mode:</b> Normal Grading Mode		<b>GEO 281 Special Topics</b>	<b>1-4 Credit hours</b>
<b>GEO 281 Special Topics</b>	<b>1-4 Credit hours</b>	<b>Grade Mode:</b> Normal Grading Mode	
<b>Grade Mode:</b> Normal Grading Mode		<b>GEO 282 Special Topics</b>	<b>1-4 Credit hours</b>
<b>GEO 282 Special Topics</b>	<b>1-4 Credit hours</b>	<b>Grade Mode:</b> Normal Grading Mode	
<b>Grade Mode:</b> Normal Grading Mode		<b>GEO 283 Special Topics</b>	<b>1-4 Credit hours</b>
<b>GEO 283 Special Topics</b>	<b>1-4 Credit hours</b>	<b>Grade Mode:</b> Normal Grading Mode	
<b>Grade Mode:</b> Normal Grading Mode			

- GEO 406 🌿 Population Geography** **3 Credit hours**  
An examination of contemporary patterns, processes, and problems of population geography in global perspective, including fertility, mortality, demographic change, migration, malnutrition, urbanization, natural resource sustainability, and future projections.  
**Attributes:** International  
**Grade Mode:** Normal Grading Mode
- GEO 408 🌿 Geog of South & Middle America** **3 Credit hours**  
A study of settlement, transportation, manufacturing, agriculture, geopolitics, and natural resources of South and Middle American countries.  
**Attributes:** International  
**Grade Mode:** Normal Grading Mode
- GEO 410 Urban Geography** **3 Credit hours**  
Study of the evolution, morphology and land use, functions, and problems of urban areas, with emphasis on governance, planning, and the social and environmental impacts of urbanization.  
**Attributes:** American Institutions  
**Grade Mode:** Normal Grading Mode
- GEO 411 Medical Geography** **3 Credit hours**  
An examination of contemporary issues and problems in health and medical geography, including the spatial aspects of global health, health care policy, and disease origins, diffusion, and ecology.  
**Grade Mode:** Normal Grading Mode
- GEO 418 Geography For Educators** **3 Credit hours**  
A study of geographic concepts, methods, and technologies essential for effective teaching of geographic content for K-12 social studies teachers and college educators.  
**Grade Mode:** Normal Grading Mode
- GEO 422 🌿 Environmental Geography** **3 Credit hours**  
**Attributes:** International  
**Grade Mode:** Normal Grading Mode
- GEO 423 Cartography & GIS** **3 Credit hours**  
This course is an introduction to cartography and is the cornerstone of Geographic Information Science. In this class you will learn basic map design, map interpretation and appreciation. We will explore the nature of spatial data, and learn what maps can and cannot represent. We will study maps as a data source for Geographic Information Systems, and as a graphic tool for scientific visualizations.  
**Grade Mode:** Normal Grading Mode
- GEO 424 Transportation Geography** **3 Credit hours**  
A geographic analysis of transportation and its spatial organization. Concepts, models, and analytical methods related to traffic demand, network configuration, and allocation of transport facilities are covered.  
**Grade Mode:** Normal Grading Mode
- GEO 425 Climatology** **4 Credit hours**  
A study of elements of weather and climate, methods of climatic classification, and the distribution and characteristics of world climate regions.  
**Grade Mode:** Normal Grading Mode
- GEO 426 Principles of GIS** **4 Credit hours**  
Introduction to Geographic Information Systems (GIS) principles, techniques, and applications for the social and natural sciences with emphasis on foundational geographic principles in a lecture/lab format.  
**Attributes:** Digital Humanities  
**Grade Mode:** Normal Grading Mode
- GEO 427 Programming GIS** **4 Credit hours**  
Students automate GIS analyses and workflows by building repeatable models, programming with Python, and using other concepts and techniques within both desktop and web GIS applications.  
**Pre-req:** GEO 423 with a minimum grade of D or GEO 426 with a minimum grade of D or GEO 429 with a minimum grade of D or GEO 430 with a minimum grade of D or NRRM 423 with a minimum grade of D or NRRM 433 with a minimum grade of D.  
**Grade Mode:** Normal Grading Mode
- GEO 429 Location Analysis and GIS** **4 Credit hours**  
Concepts, models, and methods of geographic location analysis of natural resource extraction, manufacturing, services, retail and market area analytics, and logistics using GIS.  
**Grade Mode:** Normal Grading Mode
- GEO 430 Environmental Raster GIS** **4 Credit hours**  
Environmental Applications of GIS raster analysis, including local, neighborhood, and zonal operations, terrain analysis, distance modeling, and surface interpolation, data collection and input, and advanced spatial analysis using GIS.  
**Pre-req:** GEO 426 or GEO 429 or IST 423.  
**Grade Mode:** Normal Grading Mode
- GEO 431 Remote Sensing & Photogram** **4 Credit hours**  
Scientific study of the earth using images and data captured using satellite- or aircraft-borne sensors, with emphasis on issues of acquisition, photogrammetric interpretation, spatial analysis and application.  
**Pre-req:** GEO 426 with a minimum grade of D or GEO 429 with a minimum grade of D or GEO 430 with a minimum grade of D or IST 423 with a minimum grade of D.  
**Grade Mode:** Normal Grading Mode
- GEO 432 Enterprise GIS** **3 Credit hours**  
Principles and techniques for planning, implementing, and managing Geographic Information Systems technologies in a firm or agency.  
**Pre-req:** GEO 426 or GEO 429 or GEO 430 or GEO 431 or IST 423.  
**Grade Mode:** Normal Grading Mode
- GEO 433 GPS & Mobile Geospatial Tech** **3 Credit hours**  
An analysis of the design and deployment of Global Navigation Satellite Systems such as GPS (Global Positioning System) and their application to mobile map services.  
**Pre-req:** GEO 426 or GEO 429 or GEO 430 or GEO 431 or IST 423.  
**Grade Mode:** Normal Grading Mode
- GEO 434 Floods Hazards and GIS** **3 Credit hours**  
Application of principles of flood hazards preparation, disaster management, and mitigation using Geographic Information Systems (GIS).  
**Grade Mode:** Normal Grading Mode
- GEO 440 Spatial Statistics and GIS** **4 Credit hours**  
Statistical methods applied to problem solving in geography and using GIS for display and analysis. Primary focus on descriptive and inferential spatial statistics, mapping, and spatial analysis of data.  
**Grade Mode:** Normal Grading Mode
- GEO 450 Extreme Weather** **4 Credit hours**  
Basics of extreme weather phenomena including hurricanes, tornadoes, floods, droughts, blizzards, and how to mitigate the impacts.  
**Grade Mode:** Normal Grading Mode

**GEO 454 Drones: Remote Sensing & GIS** **3 Credit hours**

Learn FAA rules and safety procedures; prepare for Remote Pilot licensing exam; operate drones to collect remote sensing data; process imagery for analysis; integrate sUAS imagery with existing GIS data.

**Grade Mode:** Normal Grading Mode

**GEO 460 Weather Analysis** **4 Credit hours**

Introduction to reading weather maps and meteorological analysis techniques including satellite and radar image interpretation and numerical weather prediction.

**Grade Mode:** Normal Grading Mode

**GEO 480 Special Topics** **1-4 Credit hours**

**Grade Mode:** Normal Grading Mode

**GEO 481 Special Topics** **1-4 Credit hours**

**Grade Mode:** Normal Grading Mode

**GEO 482 Special Topics** **1-4 Credit hours**

**Grade Mode:** Normal Grading Mode

**GEO 483 Special Topics** **1-4 Credit hours**

**Grade Mode:** Normal Grading Mode

**GEO 485 Independent Study** **1-4 Credit hours**

**Attributes:** No Textbook Required

**Grade Mode:** Normal Grading Mode

**GEO 486 Independent Study** **1-4 Credit hours**

**Attributes:** No Textbook Required

**Grade Mode:** Normal Grading Mode

**GEO 487 Independent Study** **1-4 Credit hours**

**Grade Mode:** Normal Grading Mode

**GEO 488 Independent Study** **1-4 Credit hours**

**Grade Mode:** Normal Grading Mode

**GEO 490 Internship** **1-6 Credit hours**

Cooperative learning experience with regional employer/government agency.

**Attributes:** No Textbook Required

**Grade Mode:** Credit/No Credit Grade Only

**GEO 498 🌿 Senior Capstone** **2 Credit hours**

This senior capstone course combines research methods, data collection, and analysis to produce original research on questions and problems in geography. Par I: Pilot Project.

**Pre-req:** GEO 300 with a minimum grade of D and (GEO 423 with a minimum grade of D or GEO 426 with a minimum grade of D).

**Attributes:** Capstone Course

**Grade Mode:** Normal Grading Mode

**GEO 499 🌿 Senior Capstone II** **1-3 Credit hours**

This senior capstone course combines research methods, data collection, and analysis to produce original research on questions and problems in geography. Part II.

**Pre-req:** GEO 426 with a minimum grade of D and (MTH 225 with a minimum grade of D or GEO 440 with a minimum grade of D or MGT 218 with a minimum grade of D or PSY 223 with a minimum grade of D or SOC 345 with a minimum grade of D or ANT 301 with a minimum grade of D or EDF 417 with a minimum grade of D).

**Attributes:** American Institutions, Capstone Course

**Grade Mode:** Normal Grading Mode