

GEOGRAPHY (GEOGRAPHIC INFORMATION SCIENCE AND TECHNOLOGY) - BACHELOR OF SCIENCE

Overview

The Department of Geography and Environmental Studies offers a Bachelor of Science in Geography with a concentration in Geographic Information Science and Technology (GIS&T). This major provides students with a strong foundation in geography, the study of how people and the environment interact across space and time, and introduces diverse concepts and methods from the natural sciences, social sciences, and humanities.

Unlike the concentration in Environmental Studies, the GIS&T concentration focuses on the collection, analysis, and visualization of geospatial data using various technologies for tackling human and/or environmental challenges.

Graduates pursue careers in fields such as data and information management, urban and regional planning, cultural and natural resources management, emergency management, and public health.

Program Learning Outcomes

Upon completion of the B.S. in Geography with a concentration in Geographic Information Science & Technology, students will be able to:

1. Apply geographic concepts and methods to critically evaluate human and/or environmental problems.
2. Articulate potential ethical solutions to human and/or environmental problems using critical thinking.
3. Communicate effectively in verbal, written, and/or visual formats with diverse audiences.

More Information

See the Requirements tab for details on course and credit expectations for earning the B.S. in Geography with a concentration in Environmental Studies, and the Roadmap tab for a suggested course sequence.

Course and Credit Requirements

The Department of Geography and Environmental Studies offers a Bachelor of Science in Geography with a concentration in Geographic Information Science and Technology (GIS&T). This major provides students with a strong foundation in geography, the study of how people and the environment interact across space and time, and introduces diverse concepts and methods from the natural sciences, social sciences, and humanities. Unlike the concentration in Environmental Studies, the GIS&T concentration focuses on the collection, analysis, and visualization of geospatial data using various technologies for tackling human and/or environmental challenges. Career opportunities for students pursuing this major span diverse fields, including data and information management, urban and regional planning, cultural and natural resources management, emergency management, and public health.

Students must complete all University degree requirements, which include: General Education requirements, Viewing a Wider World

requirements, and elective credits to total at least 120 credits with 48 credits in courses numbered 300 or above. Developmental coursework will not count towards the degree requirements and/or elective credits, but may be needed in order to take the necessary English and Mathematics coursework. A grade of "C-" or better is required for all courses taken for the major. Students may not take any of these courses S/U.

Prefix	Title	Credits
General Education		
<i>Area I: Communications</i>		
English Composition - Level 1		
ENGL 1110G or ENGL 1110H	Composition I Composition I Honors	4
English Composition - Level 2		
ENGL 2210G or ENGL 2210H or ENGL 2215G or ENGL 2221G	Professional and Technical Communication Professional and Technical Communication Advanced Technical and Professional Communication Writing in the Humanities and Social Science	3
Oral Communication		
COMM 1115G or COMM 1130G or HNRS 2175G	Introduction to Communication Public Speaking Introduction to Communication Honors	3
<i>Area II: Mathematics</i>		
MATH 1220G or MATH 1250G or MATH 1350G or MATH 2350G	College Algebra Trigonometry & Pre-Calculus Introduction to Statistics Statistical Methods	3
<i>Area III/IV: Laboratory Sciences and Social/Behavioral Sciences</i>		10-11
GEOG 1110G	Physical Geography (Departmental Requirement)	
GEOG 1120G or GEOG 1130G	World Regional Geography (Departmental Requirement) Human Geography	
Either an Area III/IV Laboratory Sciences Course or Social/Behavioral Sciences Course (4 or 3 credits) ¹		
<i>Area V: Humanities</i> ¹		3
<i>Area VI: Creative and Fine Arts</i> ¹		3
<i>General Education Elective</i>		
MATH 1350G or MATH 2350G	Introduction to Statistics Statistical Methods	3
Viewing a Wider World ²		6
Departmental/College Requirements		
<i>Introductory GIS&T Courses</i>		
GEOG 2130	Map Analysis & Interpretation	3
GEOG 373	Introduction to Remote Sensing	4
GEOG 381	Cartography and GIS	4
GEOG 481	Fundamentals of GIS	4
<i>Advanced GIS&T Courses</i>		
GEOG 473	Advanced Remote Sensing	4
GEOG 442	Programming for GIS	3
GEOG 485	Spatial Analysis and Modeling	3
<i>Human Geography, Physical Geography, and Environmental Studies Courses</i>		12-13
Select 12-13 credits from the following, choosing at least one course from each of these three areas: Physical Geography, Human Geography, and Environmental Studies.		
<i>Physical Geography</i>		

GEOG 351	Biogeography
GEOG 353	Geomorphology
GEOG 357	Weather & Climate: Earth's Dynamic Atmosphere
GEOG 452	Landscape Ecology
<i>Human Geography</i>	
GEOG 361V	Challenges and Opportunities of Globalization
GEOG 363V	Culture, Nature, and the Environment
GEOG 365V	The City
<i>Environmental Studies</i>	
GEOG 325V	New Mexico and the American West
GEOG 326	U.S. National Parks
GEOG 328V	Environment and Society of Latin America
GEOG 331V	Environment and Society of Europe
GEOG 435	Planning a Sustainable World
GEOG 455	Southwest Environments
GEOG 483	Field Explorations in Geography
<i>Second Language Requirement (required - see below)</i>	
Electives, to bring the total credits to 120³	
9 credits must be upper-division	
Total Credits	120

¹ See the General Education (<https://catalogs.nmsu.edu/nmsu/general-education-viewing-wider-world/>) section of the catalog for a full list of courses.

² See the Viewing a Wider World (<https://catalogs.nmsu.edu/nmsu/general-education-viewing-wider-world/#viewingawiderworldtext>) (VWW) section of the catalog for a full list of courses. Geography students are required to complete two VWW courses, totaling 6 credits. One VWW course must be selected from outside the College of Arts and Sciences, and the other must be from outside the Department of Geography and Environmental Studies. Students may substitute three credits earned through a Study Abroad Experience for one of the VWW course requirements.

³ Elective credits may vary depending on factors such as General Education course selection, second language requirements, prerequisites, dual credit, AP credit, double majors, and/or minor coursework. The amount listed in the requirements is what's needed to reach the total of 120 credits but may vary based on the specific degree. However, students may need to complete more or fewer credits on a case-by-case basis, so it's important to discuss elective requirements with an advisor.

Second Language Requirement

For the Bachelor of Science in Geography with a concentration in Environmental Studies, all majors must demonstrate one-year proficiency in a foreign language (through the 1120 level, completed with a C- or better) or equivalent/placement. The options to fulfill this requirement are listed below. The number of credits required may vary depending on the student's existing language proficiency. Consult an advisor for more information on the courses needed to fulfill the second language requirement for this degree. Please note that language immersion courses are available through the Office of Experiential Learning and Education Abroad.

Option 1:

Prefix	Title	Credits
Complete one of the following sequences:		
FREN 1110 & FREN 1120	French I and French II	8
GRMN 1110 & GRMN 1120	German I and German II	8
JAPN 1110 & JAPN 1120	Japanese I and Japanese II	8
SPAN 1110 & SPAN 1120	Spanish I and Spanish II	8
PORT 1110 & PORT 1120	Portuguese I and Portuguese II	6
<i>For Heritage Speakers:</i>		
SPAN 1210 & SPAN 1220 or SPAN 2210	Elementary Spanish for Heritage Learners I and Spanish for Heritage Learners II Spanish for Heritage Learners III	3-6

Option 2:

Prefix	Title	Credits
Complete 6 additional upper-division Geography credits beyond the major requirements.		6

Option 3:

Prefix	Title	Credits
Complete the following sequence for American Sign Language (with a C- or better):		
SIGN 1110	American Sign Language I	3
SIGN 1120	American Sign Language II	3

Option 4:

Prefix	Title	Credits
Challenge the 1120 level for the following courses:		
FREN 1120 or GRMN 1120 or JAPN 1120 or SPAN 1120	French II German II Japanese II Spanish II	4
<i>OR</i>		
Challenge the 1120/1220/2210 level for the following courses:		
PORT 1120 or SPAN 1220 or SPAN 2210	Portuguese II Spanish for Heritage Learners II Spanish for Heritage Learners III	3

Option 5:

Pass a three-credit, upper-division course (numbered 300 or above) taught in a second language by the department of Languages and Linguistics.

Option 6:

Obtain college certification of completion of three years of a second language at the high school level with a grade of C- or higher in the second-year level.

Option 7:

By obtaining certification of a working knowledge of a Native American language from the American Indian program director.

Option 8:

By obtaining, from the head of the Department of Languages and Linguistics, certification of a working knowledge of a second language if such language is not taught at NMSU.

Option 9:

In the case of a foreign student who is required to take the TOEFL exam admission, the dean will automatically waive the second language requirement.

A Suggested Plan of Study for Students

This roadmap assumes student placement in MATH 1220G College Algebra (or an alternative "Area II: Mathematics" course listed under the Requirements tab in the catalog) and in ENGL 1110G Composition I (or in an alternative "English Composition - Level I" course listed under the Requirements tab in the catalog). The contents and order of this roadmap may vary depending on initial student placement in Mathematics and English. It is only a suggested plan of study for students and is not intended as a contract. Course availability may vary from fall to spring semester and may be subject to modification or change. A grade of "C-" or better is required for all courses taken for the major. Students may not take any of these courses S/U.

First Year		Credits
GEOG 1110G	Physical Geography	4
GEOG 1120G or GEOG 1130G	World Regional Geography or Human Geography	3
GEOG 2130	Map Analysis & Interpretation	3
ENGL 1110G or ENGL 1110H	Composition I or Composition I Honors	4
MATH 1220G or MATH 1250G or MATH 1350G or MATH 2350G	College Algebra or Trigonometry & Pre-Calculus or Introduction to Statistics or Statistical Methods	3
Area VI: Creative and Fine Arts Course ¹		3
Area V: Humanities Course ¹		3
Elective Course(s) or FYEX 1112 ²		6
Credits		29

Second Year		Credits
GEOG 381	Cartography and GIS	4
GEOG 481	Fundamentals of GIS	4
ENGL 2210G or ENGL 2210H or ENGL 2215G or ENGL 2221G	Professional and Technical Communication or Professional and Technical Communication or Advanced Technical and Professional Communication or Writing in the Humanities and Social Science	3
COMM 1115G or COMM 1130G or HNRS 2175G	Introduction to Communication or Public Speaking or Introduction to Communication Honors	3
MATH 1350G or MATH 2350G	Introduction to Statistics or Statistical Methods	3
Area III: Laboratory Science or Area IV: Social/Behavioral Science Course ¹		3-4
Second Language ³		3-4
Second Language ³		3-4
Elective Courses(s) ²		6
Credits		32-35

Third Year		Credits
GEOG 373	Introduction to Remote Sensing	4
GEOG 442	Programming for GIS	3
Select one of the following Physical Geography courses		3-4
GEOG 351	Biogeography	
GEOG 353	Geomorphology	

GEOG 357	Weather & Climate: Earth's Dynamic Atmosphere	
GEOG 452	Landscape Ecology	
Select one of the following Human Geography courses		3
GEOG 361V	Challenges and Opportunities of Globalization	
GEOG 363V	Culture, Nature, and the Environment	
GEOG 365V	The City	
Select one of the following Environmental Studies courses		3
GEOG 325V	New Mexico and the American West (C- or better)	
GEOG 326	U.S. National Parks (C- or better)	
GEOG 328V	Environment and Society of Latin America (C- or better)	
GEOG 331V	Environment and Society of Europe (C- or better)	
GEOG 435	Planning a Sustainable World	
GEOG 483	Field Explorations in Geography (C- or better)	
VWW- Viewing a Wider World Course ⁴		6
Elective Course(s) ²		9
Credits		31-32
Fourth Year		Credits
GEOG 473	Advanced Remote Sensing (C- or better)	4
GEOG 485	Spatial Analysis and Modeling	3
Select a Human Geography, Physical Geography, or Environmental Studies course ⁵		3-4
Elective Course - Upper Division ²		6
Consider taking more of Physical Geography, Human Geography, and Environmental Studies courses ⁵		
Elective Course(s) ²		12
Credits		28-29
Total Credits		120-125

¹ See the General Education (<https://catalogs.nmsu.edu/nmsu/general-education-viewing-wider-world/>) section of the catalog for a full list of courses.

² Elective credits may vary depending on factors such as General Education course selection, second language requirements, prerequisites, dual credit, AP credit, double majors, and/or minor coursework. The amount listed in the requirements is what's needed to reach the total of 120 credits but may vary based on the specific degree. However, students may need to complete more or fewer credits on a case-by-case basis, so it's important to discuss elective requirements with an advisor.

³ The Second Language requirement can be fulfilled using one of nine available options detailed under the Requirements tab in the catalog. The Department of Geography and Environmental Studies recommends Option 1 (language courses numbered 1110 and 1120) or Option 2 (two upper-division GEOG courses totaling 6-8 credits). Additionally, immersion courses abroad, available through Study Abroad, may substitute for courses in the Second Language sequence.

⁴ See the Viewing a Wider World (<https://catalogs.nmsu.edu/nmsu/general-education-viewing-wider-world/#viewingawiderworldtext>) (VWW) section of the catalog for a full list of courses. Geography students are required to complete two VWW courses, totaling 6 credits. One VWW course must be selected from outside the College of Arts and Sciences, and the other must be from outside the Department of Geography and Environmental Studies. Students may substitute three credits earned through a Study Abroad Experience for one of the VWW course requirements.

- ⁵ Physical Geography course options: GEOG 351
Biogeography, GEOG 353 Geomorphology, GEOG 357 Weather &
Climate: Earth's Dynamic Atmosphere, GEOG 452 Landscape Ecology
Human Geography course options: GEOG 361V Challenges and
Opportunities of Globalization, GEOG 363V Culture, Nature, and the
Environment, GEOG 365V The City
Environmental Studies course options: GEOG 325V New Mexico
and the American West, GEOG 326 U.S. National Parks, GEOG 328V
Environment and Society of Latin America, GEOG 331V Environment
and Society of Europe, GEOG 435 Planning a Sustainable
World, GEOG 455 Southwest Environments, GEOG 483 Field
Explorations in Geography