Department of Geography
& the Environment
UNIVERSITY OF DENVER

Geography Major – Bachelor of Science in Geographic Information Science (BS-GIS)

Minimum of 60 credit hours in Geography required for major, 183 credit hours required for the degree

1. Geography core required courses (28 credit hours):

One (*SI-Natural*) *sequence*:

GEOG 1201, 1202, 1203 Environmental Systems	12 qtr hrs	Fall, Winter, Spring
-OR- GEOG 1216, 1217, 1218 Our Dynamic Earth	12 qtr hrs	Fall, Winter, Spring
-OR- GEOG 1264, 1265, 1266 Global Env. Change	12 qtr hrs	Fall, Winter, Spring
GEOG 1410 People, Places, and Landscapes (*SI-Social*)	4 qtr hrs	Fall, Winter, Spring
GEOG 2020 Cartography	4 qtr hrs	Fall, Winter
GEOG 2100 Introduction to GIS	4 qtr hrs	Fall, Winter, Spring
GEOG 2000 Geographical Statistics (or PSYC 2300 / BIOL 2090)	4 qtr hrs	Winter, Spring
GEOG 2990 Professional Development for Geography & Environmental Science	0 qtr hrs	Spring

2. GIScience Core required courses (16 credit hours):

GEOG 3010 Geographic Information Analysis	4 qtr hrs	Spring
GEOG 3140 GIS Database Design	4 qtr hrs	Fall
GEOG 3200 Remote Sensing	4 qtr hrs	Fall, Winter, Spring
GEOG 3130 GIS Programming with Python	4 qtr hrs	Winter

3. Experiential Learning Component (4 credit hours): In addition to more traditional coursework, students are required to complete at least one of the following options for extended experiential, hands-on learning opportunities:

GEOG 3710 Applied Geospatial Analysis	4 qtr hrs	Fall
-OR- GEOG 3991 Independent Study	4 qtr hrs	Variable
-OR- GEOG 3999 Internship	4 qtr hrs	Variable

4. Geography Electives (12 credit hours): A minimum of 12-quarter hours of 2000- or 3000-level elective courses in geography must be completed, include one physical (P) and one human (H) course (*e.g., See* **Appendix I**).

5. Required Minors: In addition to major course work, two minors are required for the BS degree. The first minor must be in either Computer Science **(21 credit hours)** or Mathematics **(20 credit hours)**.

Additional Coursework: Students are required to complete a minimum of two quarters **(8-10 credit hours)** of introductory coursework in the cognate subject, specifically:

Computer Science minors, complete the following (8 qtr hrs.):

MATH 1951 Calculus (*AI-Natural*) -OR- MATH 1200 Calculus for Business and Social Sciences	4 qtr hrs	Fall, Winter, Summer
MATH elective numbered higher than 1951	4 qtr hrs	Variable

Mathematics minors, complete the following (10 qtr hrs.):

COMP 1201 Intro to Computer Science I	2 qtr hrs	Fall *take 1201/1351 concurrently*
COMP 1351 Intro to Programming I	3 qtr hrs	Fall
COMP 1202 Intro to Computer Science II	2 qtr hrs	Winter *take 1202/1352 concurrently*
COMP 1352 Intro to Programming II	3 qtr hrs	Winter

The second minor **(20-25 credit hours)** can be in any discipline other than geography. Students are encouraged to work with their advisor to identify a minor that complements their interests. This requirement is met with a double major.

6. University Common Curriculum (32-40 additional credits):

First Year Seminar	4 qtr hrs	Fall
First Year Writing & Rhetoric	8 qtr hrs	Winter, Spring
Foreign Language	4-12 qtr hrs	Fall, Winter, Spring
Analytical Inquiry-Natural*	4 qtr hrs	Variable
Analytical Inquiry-Society	8 qtr hrs	Variable
Scientific Inquiry-Natural*	12 qtr hrs	Variable
Scientific Inquiry-Society*	8 qtr hrs	Variable
Advanced Seminar	4 qtr hrs	Variable

*The following Common Curriculum credits will be fulfilled through completion of major and/or minor course requirements: *AI-Natural (4 credit hours), SI-Natural (12 credit hours), SI-Society (4 credit hours).*

Appendix I. Geography Electives (12+ quarter hours) Students must complete a minimum of 12-quarter hours (2000- or 3000-level of elective courses. Electives must include at least one physical (P) and one human (H) geography course. Additional GIScience (G) courses and/or other Geography courses not listed here may also count towards elective credits. Grades must be C- or above.

GEOG 2030	H/P	Field Methods+	GEOG 3510	P	Biogeography *
GEOG 2401	H	The Human Population #	GEOG 3520	P	Geography of Soils *
GEOG 2410	H	Economic Geography *	GEOG 3560	P	Fluvial Geomorphology *
GEOG 2420	H	Geography of Tourism *	GEOG 3600	P	Meteorology *
GEOG 2430	H	World Cities +	GEOG 3610	P	Climatology *
GEOG 2500	H/P	Sustainability and Human Society #	GEOG 3630	P	Dendroclimatology *
GEOG 2550	H/P	Current Issues in Sustainability #	GEOG 3720	H/P	Mountain Environments & Sustainability *
GEOG 2700	H/P	Contemporary Environmental Issues #	GEOG 3750	H/P	Topics in Human/Environment Interactions +
GEOG 2750	P	Paleoenvironmental Field Methods #	GEOG 3755	H	Geography of Health #
GEOG 2810	H/P	Geography of Latin America *	GEOG 3800	H/P	Geography of Colorado *
GEOG 2850	H/P	Geography of Europe +	GEOG 3830	P	Natural Resource Analysis & Planning +
GEOG 3000	G	Advanced Geographic Statistics #	GEOG 3870	H/P	Water Resources and Sustainability *
GEOG 3120	G	Environmental/GIS Modeling #	GEOG 3890	H/P	Ecological Economics *
GEOG 3170	G	LiDAR: Theory & Applications #	GEOG 3920	G	Remote Sensing Seminar +
GEOG 3230	G	Advanced Remote Sensing #	GEOG 3955	P	Pollen Analysis Seminar *
GEOG 3300	H	Cultural Geography +			**ENVI and GEOL courses**
GEOG 3310	H/P	Culture/Nature/Econ-Human Ecology #	ENVI 2660	P	Natural History – Sonora & Baja #
GEOG 3340	H/P	Geographies of Migration +	ENVI 3000	H/P	Environmental Law #
GEOG 3350	H	Qualitative Methods in Geography *	ENVI 3550	H/P	Environmental Issues – Colorado +
GEOG 3400	H	Urban Landscapes #	GEOL 2020	P	Historical Geology *
GEOG 3410	H/G	Urban Applications of GIS *	GEOL 2400	P	Geology and Ecology of the SW #
GEOG 3420	H	Urban & Regional Planning #	GEOL 2800	P	Geology of National Parks +
GEOG 3425	H	Urban Sustainability *	GEOL 3010	P	Process Geomorphology (GEOG 3910) *
GEOG 3440	H	Urban Transportation Planning *	GEOL 3100	P	Environmental Geology *
GEOG 3445	H	Sustainability and Transportation *	GEOL 3520	P	Erosion Process and Management +
GEOG 3500	P	Reconstructing Quaternary Environments*	GEOL 3540	P	Hydrology *

 # = offered every year * = offered every other year + = offered occasionally

Appendix II. Suggestions for your second minor. (20+ quarter hours) Students are encouraged to pursue a minor that complements your interests in GIS applications. The list below are disciplines you might consider; however, a second minor *in any discipline* will fulfill the BS degree. This requirement is met with a double major.

Natural Sciences	Biology / Ecology	Arts, Humanities, & Social Sciences (AHSS)	Anthropology & Archeology
	Chemistry		Criminology
	Physics		Emergent Digital Practices
Business Information & Analytics	Business Analytics		Media, Film & Journalism
	Information Technology		Sociology
	Statistics	Sustainability, Policy, & Equity	Critical Race & Ethnic Studies
Business Administration & Marketing	Business Administration		Intercultural Global Studies
	Marketing		International Studies
Real Estate & the Built Environment	Real Estate		Public Policy
	Property Development		Sustainability
	Construction Project Management		Urban Studies

Suggested Academic Course Plan
BS GIS with COMPUTER SCIENCE MINOR

Year 1: Fall Quarter	Year 1: Winter Quarter	Year 1: Spring Quarter
GEOG 1201, 1216, or 1264 Foreign Language 1 FSEM 1111 Common Curriculum (Analytical Inquiry: Society and Culture or Scientific Inquiry: Society and Culture)	GEOG 1202, 1217, or 1265 Foreign Language 2 WRIT 1122 GEOG 1410 or GEOG 2020 or Common Curriculum (Analytical Inquiry: Society & Culture or Scientific Inquiry: Society and Culture)	GEOG 1203, 1218, or 1266 Foreign Language 3 WRIT 1133 GEOG 1410 or GEOG 2100 or Common Curriculum (Analytical Inquiry: Society & Culture or Scientific Inquiry: Society and Culture)
Year 2: Fall Quarter	**Year 2: Winter Quarter**	**Year 2: Spring Quarter**
GEOG 2020, 2100, or 3200 COMP 1201 COMP 1351 Common Curriculum (Analytical Inquiry: Society and Culture or Scientific Inquiry: Society and Culture) Minor #2	GEOG 2020, 2100, or 3200 COMP 1202 COMP 1352 GIS/GEOG Elective or MATH 1951 or MATH 1200 Minor #2 INTZ 2501	GEOG 2100, or 3200 COMP 1353 GIS/GEOG Elective or MATH 1952 or MATH elective (>1951) Minor #2
Year 3: Fall Quarter	**Year 3: Winter Quarter**	**Year 3: Spring Quarter**
Study Abroad or Field Quarter	GEOG 2000 GEOG 3130 COMP minor elective GIS/GEOG Elective or MATH 1951 or MATH 1200	GEOG 3010 COMP minor elective GIS/GEOG Elective or MATH 1952 or MATH elective (>1951) Minor #2
Year 4: Fall Quarter	**Year 4: Winter Quarter**	**Year 4: Spring Quarter**
GEOG 3140 GEOG 3710 or other experiential learning Minor #2 Elective	Advanced Seminar GIS/GEOG Elective	GEOG 2990 Electives

Suggested Academic Course Plan
BS GIS with MATHEMATICS MINOR

Year 1: Fall Quarter	Year 1: Winter Quarter	Year 1: Spring Quarter
GEOG 1201, 1216, or 1264 Foreign Language 1 FSEM 1111 Common Curriculum (Analytical Inquiry: Society and Culture or Scientific Inquiry: Society and Culture)	GEOG 1202, 1217, or 1265 Foreign Language 2 WRIT 1122 GEOG 1410 or GEOG 2020 or Common Curriculum (Analytical Inquiry: Society & Culture or Scientific Inquiry: Society and Culture)	GEOG 1203, 1218, or 1266 Foreign Language 3 WRIT 1133 GEOG 1410 or GEOG 2100 or Common Curriculum (Analytical Inquiry: Society & Culture or Scientific Inquiry: Society and Culture)
Year 2: Fall Quarter	**Year 2: Winter Quarter**	**Year 2: Spring Quarter**
GEOG 2020, 2100, or 3200 COMP 1201 COMP 1351 MATH 1951 Common Curriculum (Analytical Inquiry: Society and Culture or Scientific Inquiry: Society and Culture)	GEOG 2020, 2100, or 3200 COMP 1202 COMP 1352 MATH 1952 Minor #2 INTZ 2501	GEOG 2100, or 3200 MATH 1953 GIS/GEOG Elective Minor #2
Year 3: Fall Quarter	**Year 3: Winter Quarter**	**Year 3: Spring Quarter**
Study Abroad or Field Quarter	GEOG 2000 GEOG 3130 MATH Minor GIS/GEOG Elective or COMP 1202/1352	GEOG 3010 MATH Minor GIS/GEOG Elective Minor #2
Year 4: Fall Quarter	**Year 4: Winter Quarter**	**Year 4: Spring Quarter**
GEOG 3140 GEOG 3710 or other experiential learning Minor #2 Elective	Advanced Seminar GIS/GEOG Elective	GEOG 2990 Electives