

Spatial Data Science and Technology (BA/BS)

Spatial data is integrated in our everyday lives. From geotagging to geocaching to finding a place to enjoy some coffee, we are all integrated in a complex web of movement, place, and discovery. Spatial data science and technology is not a program about making maps—it's about asking relevant questions, harnessing data, and understanding the appropriate way to use it. It's not just about learning how to use software programs, but about how you can contribute to a new generation of digital technologies that represent a high-growth industry—one that is revolutionizing business, nonprofit, and government worlds alike. At the UO, faculty members use spatial technologies to focus on remote sensing of river systems, climate change analysis, web-mapping, cartography, spatial cognition, spatial decision-making, and social equity.

This major is very flexible with four required courses in geography and computer science, and then eight electives that students can focus in their areas of interest. Our courses focus on geographic information systems science, cartography, remote sensing, spatial analysis, and spatial modeling.

Program Learning Outcomes

Upon successful completion of this program, students will be able to:

The spatial data science and technology major requires a minimum of 48 credits, drawing on courses in geography and computer information science. The major requires four compulsory courses (16 credits) that provide foundational skills, concepts, and critical thinking abilities. An additional eight elective courses (32 credits) are required. Upon declaring the major, students meet with the geography undergraduate advisor to tailor a series of elective courses best suited to individual student needs and employment aspirations. At least nine courses used for the major must be taken for a letter grade. A grade of C– or better and a GPA of 2.25 or better is required in courses applied to the major.

For more information, contact the Tykeson hall advising center at tykesonadvising@uoregon.edu, or email the Director of Undergraduate Studies, Leslie McLees here (geogadvr@uoregon.edu), or schedule an advising appointment at <https://cas.uoregon.edu/advising/access-advising/> (<https://cas.uoregon.edu/advising/access-advising/>)

Spatial Data Science and Technology Major Requirements

Core courses provide foundational skills, concepts, and critical thinking abilities. Some of the introductory courses, such as GIScience I (GEOG 481), are prerequisites for more advanced courses. Students are not required to complete these before moving to elective courses (except where prerequisites are required).

Electives. Rather than adopting a series of specializations, the electives component will remain flexible. Upon declaring the major, students should meet with the undergraduate advisor to work out a series of courses that best fit student needs and employment aspirations. A full list of elective courses can be found on the major page (<https://geography.uoregon.edu/sdst/>) on the department website.

Code	Title	Credits
Core Courses		
GEOG 181	Our Digital Earth	4
GEOG 281	The World and Big Data	4
GEOG 481	GIScience I	4
CS 122	Introduction to Programming and Problem Solving	4
Elective Courses		
Choose courses totaling 32 credits from the following:		32
GEOG 403	Thesis	
GEOG 482	GIScience II	
GEOG 485	Remote Sensing I	
GEOG 490	GIScience: [Topic] ¹	
GEOG 491	Advanced Geographic Information Systems	
GEOG 493	Advanced Cartography	
GEOG 494	Spatial Analysis	
GEOG 495	Geographic Data Analysis	
GEOG 498	Geospatial Project Design	
CS 210	Computer Science I	
CS 211	Computer Science II	
300- or 400-level course with a GEOG subject code not listed above		
400-level course with a CS subject code not listed above		
Total Credits		48

¹ Special topics include courses that are offered less frequently, but also qualify for credit when offered under the course number GIScience: [Topic] (GEOG 490). Topics include Web Mapping, Server GIS, Qualitative Spatial Reasoning, and Spatial Simulation.

Honors Programs

The Department of Geography offers an honors option for its majors. More information is available on the department website (<https://socialsciences.uoregon.edu/geography/undergraduate-programs/honors-requirements/>), contact the undergraduate support at undergradasu7@uoregon.edu, or email the Director of Undergraduate Studies, Leslie McLees here (geogadvr@uoregon.edu).

Four-Year Degree Plan

The degree plan shown is only a sample of how students may complete their degrees in four years. There are alternative ways. Students should consult their advisor to determine the best path for them.

Bachelor of Arts in Spatial Data Science and Technology

Course	Title	Credits	Milestones
First Year			
Fall			
GEOG 181	Our Digital Earth	4	
WR 121Z	Composition I	4	
General-education course in arts and letters that also satisfies multicultural requirement		4	
First term of first-year second-language sequence		5	
Credits		17	

Winter

GEOG 281	The World and Big Data	4
WR 122Z	Composition II	4
Group-satisfying course in social science		4
Second term of first-year second-language sequence		5

Credits 17

Spring

CS 122	Introduction to Programming and Problem Solving	4
Group-satisfying course in arts and letters		4
General-education course in social science that also satisfies multicultural requirement		4
Third term of first-year second-language sequence		5

Credits 17

Total Credits 51

Course Title Credits Milestones

Second Year

Fall

GEOG 481	GIScience I	4
General-education course in arts and letters		4
General-education course in science		4
First term of second-year second-language sequence		5

Credits 17

Winter

General-education course in arts and letters		4
Elective course in spatial data science and technology		8
Second term of second-year second-language sequence		5
Consider studying abroad		

Credits 17

Spring

Elective course in spatial data science and technology		4
Elective courses		8
Third term of second-year second-language sequence		5

Credits 17

Total Credits 51

Course Title Credits Milestones

Third Year

Fall

Elective course in spatial data science and technology E		4
Group-satisfying course in science		4
Upper-division elective courses		8

Credits 16

Winter

Elective course in spatial data science and technology		4
General-education course in social science		4
General-education course in science	Investigate summer internships	4

Upper-division elective course	4
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Credits 16

Spring

Elective course in spatial data science and technology		4
Upper-division elective course		4
Multicultural course		4
Elective course		4

Credits 16

Total Credits 48

Course Title Credits Milestones

Fourth Year

Fall

Elective course in spatial data science and technology		4
Upper-division elective courses		8
Multicultural course		4

Credits 16

Winter

Elective course in spatial data science and technology		4
Upper-division elective course	Apply for graduation on DuckWeb	4

Credits 8

Elective course		4
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Credits 12

Spring

Upper-division elective course		4
Elective courses		8

Credits 12

Total Credits 40

Bachelor of Science in Spatial Data Science and Technology

Course Title Credits Milestones

First Year

Fall

GEOG 181	Our Digital Earth	4
WR 121Z	Composition I	4
General-education course in arts and letters that also satisfies multicultural requirement		4
Mathematics course		4

Credits 16

Winter

GEOG 281	The World and Big Data	4
WR 122Z	Composition II	4
Group-satisfying course in social science		4
Mathematics course		4

Credits 16

Spring

CS 122	Introduction to Programming and Problem Solving	4
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Group-satisfying course in arts and letters	4
General-education course in social science that also satisfies multicultural requirement	4
Mathematics course	4
Credits	16
Total Credits	48

Course	Title	Credits	Milestones
Second Year			
Fall			
GEOG 481	GIScience I	4	
	General-education course in arts and letters	4	
	General-education course in social science	4	
	General-education course in science	4	
	Credits	16	
Winter			
	Elective courses in spatial data science and technology	8	
	General-education course in arts and letters	4	
	General-education course in social science	4	
	Credits	16	
Spring			
	Elective course in spatial data science and technology	4	
	General-education course in social science	4	
	General-education course in science	4	
	Elective course	4	
	Credits	16	
	Total Credits	48	

Course	Title	Credits	Milestones
Third Year			
Fall			
	Elective course in spatial data science and technology	4	
	Group-satisfying course in science	4	
	Upper-division elective courses	8	
	Credits	16	
Winter			
	Elective course in spatial data science and technology	4	
	General-education course in social science	4	
	General-education course in science	4	Investigate summer internships
	Upper-division elective course	4	
	Credits	16	
Spring			
	Elective course in spatial data science and technology	4	
	Upper-division elective course	4	
	Multicultural course	4	
	Elective course	4	
	Credits	16	
	Total Credits	48	

Course	Title	Credits	Milestones
Fourth Year			
Fall			
	Elective course in spatial data science and technology	4	
	Upper-division elective courses	8	
	Multicultural course	4	
	Credits	16	
Winter			
	Elective course in spatial data science and technology	4	
	Upper-division elective course	4	Apply for graduation on DuckWeb
	Elective course	4	
	Start a job search with geography academic career advisor		
	Credits	12	
Spring			
	Upper-division elective course	4	
	Elective courses	8	
	Credits	12	
	Total Credits	40	