# 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, e-mail the undergraduate advisor, Leslie McLees, at geogadvr@uoregon.edu, or schedule an advising appointment at https://geography.uoregon.edu/undergrad/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

	listed above	vel course with a GEOG subject code not se with a CS subject code not listed above	
		vel course with a GEOG subject code not	
	000 400 1		
	CS 211	Computer Science II	
	CS 210	Computer Science I	
	GEOG 498	Geospatial Project Design	
	GEOG 495	Geographic Data Analysis	
	GEOG 494	Spatial Analysis	
	GEOG 493	Advanced Cartography	
	GEOG 491	Advanced Geographic Information Systems	
	GEOG 490	GIScience: [Topic] <sup>1</sup>	
	GEOG 485	ŭ	
	GEOG 482	GIScience II	
	GEOG 403	Thesis	
Ch	noose courses t	totaling 32 credits from the following:	32
Ele	ective Courses	s	
CS	S 122	Introduction to Programming and Problem Solving	4
GE	EOG 481	GIScience I	4

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://geography.uoregon.edu/undergrad/honors/) or by contacting the undergraduate advisor, 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	<b>Credits Milestones</b>		
First Year				
Fall				
GEOG 181	Our Digital Earth	4		
WR 121Z	Composition I	4		
General-edu satisfies mul	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-satisfy	ying course in social science	4		
Second term	of first-year second-language sequence	5		
	Credits	17		

Spring			Elective cour	rse
CS 122	Introduction to Programming and	4		C
	Problem Solving			7
	ying course in arts and letters	4	_	_
	cation course in social science that also	4	Course	1
	ticultural requirement	5	Fourth Year	,
Third term of	first-year second-language sequence	5 17	Fall	
	Credits	-	Elective cour	
	Total Credits	51	Upper-division	
Course	Title	Credits Milestones	Multicultural	000
Second Yea	ır		Winter	
Fall				
GEOG 481	GIScience I	4	Elective cour	
General-edu	cation course in arts and letters	4	Upper-division	ш
General-edu	cation course in science	4		
First term of	second-year second-language sequence	5		
	Credits	17	Elective cour	rse
Winter			Start a job se	ear
General-edu	cation course in arts and letters	4	advisor	
Elective cour	rsee in spatial data science and	8		(
technology	·		Spring	
Second term	of second-year second-language	5	Upper-division	on e
sequence			Elective cour	rses
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Spring	Credits		Pachala	1
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Elective co	urse		4
	Credits		16
	Total Credits		48
Course	Title	Credits N	lilesto
Fourth Yea	ar		
Fall			
Elective co	urse in spatial data science and technology	1	4
Upper-divis	sion elective courses		8
Multicultura	al course		4
	Credits		16
Winter			
Elective co	urse in spatial data science and technology	/	4
Upper-divis	sion elective course	Apply for graduation on DuckWeb	4
Elective co	urse		4
Start a job advisor	search with geography academic career		
	Credits		12
Spring			
Upper-divis	sion elective course		4
Elective co	urses		8
	Credits		12
	Total Credits		40

# Bachelor of Science in Spatial Data Science and Technology

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Course	Title	Credits Milestones
First Year		
Fall		
GEOG 181	Our Digital Earth	4
WR 121Z	Composition I	4
00	cation course in arts and letters that also ticultural requirement	4
Mathematics	course	4
	Credits	16
Winter		
GEOG 281	The World and Big Data	4
WR 122Z	Composition II	4
Group-satisfy	ying course in social science	4
Mathematics	course	4
	Credits	16
Spring		
CS 122	Introduction to Programming and Problem Solving	4
Group-satisfy	ying course in arts and letters	4
General-education course in social science that also satisfies multicultural requirement		

Mathematics	course	4
	Credits	16
	Total Credits	48
Course	Title	Credits Milestone
Second Year	ır	
Fall		
GEOG 481	GIScience I	4
General-edu	cation course in arts and letters	4
General-edu	cation course in social science	4
General-edu	cation course in science	4
	Credits	16
Winter		
Elective courtechnology	rses in spatial data science and	8
General-edu	cation course in arts and letters	4
General-edu	cation course in social science	4
	Credits	16
Spring		
Elective cou	rse in spatial data science and technology	4
General-education course in social science		4
General-edu	cation course in science	4
Elective cou	4	
	Credits	16

	Upper-division elective courses		8
	Multicultural course		4
	Credits		16
	Winter		
S	Elective course in spatial data science and technology		4
	Upper-division elective course	Apply for graduation on DuckWeb	4
	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

Course Title	Credits Milestone
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	Investigate 4
	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

**Total Credits** 

#### Title **Credits Milestones** Course

#### Fourth Year

#### Fall

Elective course in spatial data science and technology

48

**Credits Milestones**