

(Discontinued to new students as of fall 2022, new students should do the Environmental Data Science track)

## Geospatial Information Science



### Why study geospatial information science?

The geospatial information science track introduces students to computer-based analysis of geographic data and the theory and practice of aerial and satellite imagery, geographical information systems (GIS), and spatial analysis, applied to natural resource assessment and to monitoring human impacts on the environment. The major trains students to become GIS and remote sensing specialists for employment in government agencies, profit and non-profit organizations. In addition to course work, student internships with private and government agencies to gain practical experience are encouraged and we can assist with locating an appropriate internship program. All public and private programs that manage natural resources have needs for spatial information technology specialists. Graduates will be well equipped for land and resource management positions in industry, non-profit and government agencies, and for advanced studies in geography, ecology, environmental sciences and management.

### Preparatory Subject Matter Requirements

Preparatory Subject Matter		Quarter(s) Offered	Units	Completed	Notes
<b>Written and Oral Expression</b>					
UWP 101, or any from the 102 or 104 series	Upper Division Writing	I, II, III, IV	4	_____	<u>May test out of requirement</u>
CMN 1, 3V, 3Y, or DRA 10	Communication	I, II, III, IV	4	_____	_____
<b>Biological Sciences</b>					
BIS 2A	Essentials of Life on Earth	I, II, III, IV	5	_____	_____
BIS 2B	Principles of Ecology and Evolution	I, II, III, IV	5	_____	_____
BIS 2C	Biodiversity and the Tree of Life	I, II, III, IV	5	_____	_____
<b>Geology</b>					
<i>Choose one of the following</i>					
GEL 1	The Earth	I, II, III	4	_____	_____
GEL 50 (recommended)	Physical Geology	I, II, III	3	_____	_____
<b>Chemistry</b>					
CHE 2A or 2AH	General Chemistry	I, II, IV	5	_____	_____
CHE 2B or 2BH	General Chemistry	II, III, IV	5	_____	_____
CHE 2C or 2CH (recommended, not required)	General Chemistry	I, III, IV	5	_____	_____
<b>Physics</b>					
<i>Complete either 1AB or 7ABC</i>					
PHY 1A	General Physics	I, II, IV	3	_____	_____
PHY 1B	General Physics	II, III	3	_____	_____
PHY 7A	General Physics	I, II, III, IV	4	_____	_____
PHY 7B	General Physics	I, II, III, IV	4	_____	_____
PHY 7C	General Physics	I, II, III, IV	4	_____	_____
<b>Economics</b>					
ECN 1A, 1AV, or 1AY	Principles of Microeconomics	I, II, III, IV	4	_____	_____
<b>Mathematics</b>					
MAT 16A, 17A, or 21A	Calculus	I, II, III, IV	3-4	_____	<u>MAT 17AB recommended</u>
MAT 16B, 17B, or 21B	Calculus	I, II, III, IV	3-4	_____	_____
<b>Environmental Science and Policy</b>					
ESP 1	Environmental Analysis	I, IV	4	_____	_____

I = fall quarter, II = winter quarter, III = spring quarter, IV = summer session

\*Course is offered in odd years only (2023, 2025, etc.)

\*\*Course is offered in even years only (2022, 2024, etc.)

## Core Subject Matter Requirements

NOTE: Students graduating with this major are required to attain at least a C average (2.0 GPA) in all courses taken at the university in Depth Subject Matter *and* pass all coursework. See requirements of the College of Agriculture & Environmental Science in the UC Davis General Catalog.

Depth Subject Matter	Prerequisites	Qtr(s)	Units	Completed	
<b>Global Environment</b>					
ESM 120	Global Environmental Interactions	One college-level chemistry and biology course	II	4	_____
<b>Ecology</b>					
<i>(Choose one of the following)</i>					
ESP 100	General Ecology	BIS 2A-C; MAT 16A-B or 17A-B or 21A-B; STA 13 recommended	I, II, IV	4	_____
EVE 101	Introduction to Ecology	BIS 2A-C; MAT 16A-B or 17A-B or 21A-B; or equivalent	I, II, III, IV	4	_____
<b>Policy</b>					
ESP 162	Environmental Policy	ECN 1A	II	4	_____
<b>Statistics</b>					
<i>(Choose one of the following – Statistics 100 recommended)</i>					
STA 13	Elementary Statistics	Two years of high school algebra or equivalent in college	I, II, III, IV	4	_____
STA 100	Applied Statistics for Biological Sciences	MAT 16B or 17B or 21B with a C- or better	I, II, III, IV	4	_____
<b>Environmental Monitoring</b>					
<i>(Choose one of the following)</i>					
ATM 124	Meteorological Instruments & Observations	ATM 60	I	3	_____
ESM 108	Environmental Monitoring	Entry level course in the environmental sciences	III	3	_____
ESP 151L	Limnology Lab	ESP 151 (can be concurrent)	III	3	_____
ESP 179	Environmental Impact Assessment	ESP 1 or the equivalent	II, IV	4	_____
<b>Environmental Data Science</b>					
<i>(Choose one of the following)</i>					
ABT/LDA 150	Introduction to GIS	None	I, II, III	4	_____
ESP 106	Environmental Data Science	STA 13 or 32 or 100 (can be concurrent)	II	4	_____
<b>Internship</b>					
ESM/ESP 92/192 Internship		Upper division standing, permission of instructor Variable unit – must take at least 3 units of internship May complete internship in a different area with prior approval (e.g.: PLS, SSC, ATM)	I, II, III, IV	3	_____
<b>Capstone</b>					
ESM 195	Integrating Env Science & Management	Senior standing in ESM	III	2	_____
<b>Honors Thesis (Optional)</b>					
ESM 194H	Senior Honors Thesis	Senior standing, Overall GPA of 3.50 or higher; Consent of the master adviser		2-6	_____

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## Geospatial Information Science

Required Courses	Prerequisites	Qtr(s)	Units	Completed	
<b>Select two GIS courses</b>					
ABT 181N*	Concepts & Methods in GIS	LDA 150 or consent of instructor	II	4	_____
ABT/HYD 182**	Environmental Analysis with GIS	ABT 150 or equiv GIS experience, biology and/or ecology courses rec.	II	4	_____
ESM 185	Aerial Photo Interp. & Remote Sensing	Upper division standing	I	4	_____
ESM 186	Environmental Remote Sensing	MAT 16B; PHY 7C or 9B; upper division standing; LDA 150 rec.	II	5	_____
<b>Select two environmental policy courses</b>					
ESP/ECI 163**	Energy & Env Aspects of Transportation	Upper division standing in environmental studies	I	4	_____
ESP 165	Climate Policy	ECN 1A or ESP 1 or consent of instructor	I	3	_____
ESP 166	Ocean & Coastal Policy	ESP 1 or consent of instructor	I	3	_____
ESP 169**	Water Policy & Politics	ECN 1A or POL 1 recommended	III	3	_____
ESP 171	Urban & Regional Planning	ESP 1 recommended	III	4	_____
ESP 172	Public Lands Management	ECN 1A and POL 1 recommended	I	4	_____
ESP 174	Environmental Justice Policy & Practice	ESP 1 or equivalent recommended	III	4	_____
ESP 179	Environmental Impact Assessment	ESP 1 or the equivalent	II, IV	4	_____
SOC 160	Sociology of the Environment	SOC 1 or 2 or 3 recommended	I	4	_____
<b>Select two quantitative analysis courses</b>					
ESP 106	Environmental Data Science	STA 13 or 32 or 100 (can be concurrent)	II	4	_____
ESP 121	Population Ecology	BIS 2B-C; MAT 16B or 17B or 21B or 21BH	II	4	_____
STA 104	Nonparametric Statistics	STA 13 or 32 or 100 with a C- or better	II, III	4	_____
STA 106	Analysis of Variance	STA 13 or 32 or 100 with a C- or better	I, II, III, IV	4	_____
STA 108	Regression Analysis	STA 13 or 32 or 100 with a C- or better	I, II, III, IV	4	_____
STA 130A	Mathematical Statistics: Brief Course	MAT 16C or 17C or 21C; STA 13 or 32 or 100; all with a C- or better	I	4	_____
STA 130B	Mathematical Statistics: Brief Course	STA 130A or 131A or MAT 135A with a C- or better	II	4	_____
STA 137	Applied Time Series Analysis	STA 108 with a C- or better	I, II	4	_____
<b>Select three environmental science courses, must select at least one from section A and one from section B</b>					
<b>A – Physical</b>					
ATM 110*	Weather Observation & Analysis	ATM 60	II	4	_____
ATM 116	Modern Climate Change	None	I	3	_____
ATM 133	Biometeorology	One biological course; MAT 16B; or consent of instructor	II	4	_____
SSC 100	Principles of Soil Science	College-level course in each of CHE, PHY, BIS, and GEL recommended	I	5	_____
<b>B – Biomes</b>					
ESP 124	Marine and Coastal Field Ecology	Acceptance into the Bodega Marine Lab summer program	IV	3	_____
ESP/GEL 150C**	Biological Oceanography	Acceptance into the Bodega Marine Lab summer program	IV	4	_____
ESP 151	Limnology	BIS 2A and 2B; BIS 2C and ESP 100 or EVE 101 recommended	III	4	_____
ESP 152	Coastal Oceanography	Acceptance into the Bodega Marine Lab summer program	IV	3	_____
ESP 155	Wetland Ecology	BIS 2A or equivalent; ESP 100 or EVE 101 recommended		4	_____
GEL 136	Ecogeomorphology of Rivers & Streams	Enrollment by application only, not offered every year	III	5	_____
PLS 101	Agriculture & the Environment	PLS 2 or consent of instructor	II	3	_____
PLB/EVE 117	Plant Ecology	BIS 2A-C; PLB 111 recommended	I	4	_____

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