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
Written and Oral Expression					
UWP 101, 102A-G, 104A-F	Upper Division Writing	I, II, III, IV	4	_____	May test out of requirement UWP 102G, Env Writing, offered I, III
CMN 1, 3, or DRA 10	Public Speaking	I, II, III, IV	4	_____	_____
Biological Sciences					
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	_____	_____
Geology					
Choose one of the following					
GEL 1	The Earth	I, II, III	4	_____	_____
GEL 50 (recommended)	Physical Geology	I, II, III	3	_____	_____
Chemistry					
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	_____	_____
Physics					
Complete either 1AB or 7ABC					
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	_____	_____
Economics					
ECN 1A	Principles of Microeconomics	I, II, III, IV	4	_____	_____
Mathematics					
MAT 16A, 17A, or 21A	Calculus	I, II, III, IV	3-4	_____	MAT 17AB recommended
MAT 16B, 17B, or 21B	Calculus	I, II, III, IV	3-4	_____	_____
Environmental Science and Policy					
ESP 1	Environmental Analysis	I	4	_____	_____

I = fall quarter, II = winter quarter, III = spring quarter, IV = summer session
*Course is offered in odd years only (2017, 2019, etc.)
**Course is offered in even years only (2016, 2018, 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	(29-32 Units)	Prerequisites	Qtr(s)	Units	Completed
Global Environment					
ESM 120	Global Environmental Interactions	One college-level chemistry and biology course	II	4	_____
Ecology					
(Choose one of the following)					
ESP 100	General Ecology	BIS 2A-C and MAT 16A-B, STA 13 recommended	I, III, IV	4	_____
EVE 101	Introduction to Ecology	BIS 2A-C and MAT 16A-B or the equivalent	I, II, III, IV	4	_____
Policy					
ESP 162	Environmental Policy	ECN 1A	II	4	_____
Statistics					
(Choose one of the following – Statistics 100 recommended)					
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 the equivalent	I, II, III, IV	4	_____
Environmental Monitoring					
(Choose one of the following)					
ESM 108	Environmental Monitoring	Entry level course in the environmental sciences	III	3	_____
ESP 179	Environmental Impact Assessment	Upper division standing, one course in environmental science	II, IV	4	_____
GIS Technology					
ABT/LDA 150	Introduction to GIS	PLS 21 or equivalent with consent of instructor	I, III	4	_____
Internship					
ESM/ESP 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	_____
Capstone					
ESM 195	Integrating Env Science & Management	Senior standing; Environmental science major (e.g.: ESM, EPAP, ETX, WFC)	III	2	_____
Honors Thesis *(Optional)*					
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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Required Courses		Prerequisites	Qtr(s)	Units	Completed
Select two GIS courses					
ABT 181N*	Concepts & Methods in GIS	ABT 150 or LDA 50 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; ABT 150 rec.	II	5	_____
Select two environmental policy courses					
ESP 163**	Energy & Env Aspects of Transportation	ECN 1A	I	4	_____
ESP 165N	Climate Policy	ECN 1A, ESP 1, or consent of instructor	III	3	_____
ESP 166N**	Ocean & Coastal Policy	ESP 1 or consent of instructor	II	3	_____
ESP 169**	Water Policy & Politics	ECN 1A or POL 1	III	3	_____
ESP 171	Urban & Regional Planning	ESP 1	III	4	_____
ESP 172	Public Lands Management	ECN 1A	I	4	_____
ESP 179	Environmental Impact Assessment	Upper division standing and one course in environmental science	II, IV	4	_____
SOC 160	Sociology of the Environment	Upper division standing in Sociology strongly recommended	II	4	_____
Select two quantitative analysis courses					
ESP 121	Population Ecology	BIS 2B-C; MAT 16A-B	II	4	_____
STA 104*	Nonparametric Statistics	STA 13, 32, 100, or 102	II	4	_____
STA 106	Analysis of Variance	STA 13, 32, 100, or 102	I, II, IV	4	_____
STA 108	Regression Analysis	STA 13, 32, 100, or 102	I, II, III, IV	4	_____
STA 130A	Mathematical Statistics: Brief Course	MAT 16B	I	4	_____
STA 130B	Mathematical Statistics: Brief Course	STA 130A	II	4	_____
STA 137	Applied Time Series Analysis	STA 108 or equivalent	III	4	_____
Select three environmental science courses, must select at least one from section A and one from section B					
A – Physical					
ATM 110	Weather Observation & Analysis	ATM 60	III	4	_____
ATM 116**	Climate Change	UWP 1; Consent of instructor	III	4	_____
ATM 133	Biometeorology	One biological course; MAT 16B; or consent of instructor	II	4	_____
SSC 100	Principles of Soil Science	CHE 2A-B, PHY 1A-B, BIS 2A; GEL 50, BIS 2C recommended	I	5	_____
B – Biomes					
ESP 150C	Biological Oceanography	Acceptance into the Bodega Marine Lab summer program	IV	4	_____
ESP 151	Limnology	Upper division standing; BIS 2A	III	4	_____
ESP 152	Coastal Oceanography	Acceptance into the Bodega Marine Lab summer program	IV	3	_____
ESP 155	Wetland Ecology	ESP 100 or PLB 117; ESP 110 or 151 recommended	I	4	_____
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	_____
GEL 136†	Ecogeomorphology of Rivers & Streams	Upper division standing; consent of instructor		5	_____

†Future availability unknown

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