Ecology, Biodiversity & Conservation

Why study ecology, biodiversity, and conservation?

The Ecology, Biodiversity and Conservation Track aims to give students a broad ecological training that prepares them to be field ecologists, organismal biologists (biodiversity specialists) or conservation specialists. It trains students for working for public agencies or private companies, and serves as preparation for graduate school in a variety of environmental biology disciplines. A series of foundation courses are required, including upper division statistics, physical environmental sciences, public policy, evolution, genetics, biogeography, and a field course for hands on field experience of hypothesis testing in nature. The track then allows students to specialize in options in Organismal Biology and Biodiversity, Ecology, or Conservation. UC-Davis has more ecologists than any other institution in the World, and this track draws on this rich human resource.

Preparatory Subject Matter Requirements

Preparatory Subject Matter		Quarter(s) Offered	Units	Completed	Notes
Written and Oral Expression					
UWP 101, or any from the 102 or 104 series	Upper Division Writing	I, II, III, IV	4		May test out of requirement
CMN 1, 3V, 3Y, or DRA 10	Communication	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, 1AV, or 1AY	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, IV	4		

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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
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; 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	
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 17B or 21B with a C- or better	I, II, III, IV	4	
Environmental Monitoring					
(Choose one of the following)					
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	
Environmental Data Science					
(Choose one of the following)					
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	
Internship					
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	
Capstone					
ESM 195	Integrating Env Science & Management	Senior standing in ESM	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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Select one physical processes course					
ATM 60	Introduction to Atmospheric Science	MAT 16A or 21A; PHY 7A or 9A	I	4	
ATM 116	Modern Climate Change	None	I	3	
ATM 133	Biometeorology	One biological course and MAT 16B or consent of instructor	II	4	
ESM 121	Water Science & Management	PHY 10 or GEL 1	III	3	
ESM 131	Air as a Resource	CHE 2A or 10; CHE 2B	II	3	
ESP 152	Coastal Oceanography	Acceptance into the Bodega Marine Lab summer program	IV	3	
GEL 134*	Env Geology & Land Use Planning	GEL 1 or 50	III	3	
HYD 143**	Echohydrology	HYD 141 or ESP 1 or ESM 108 or ESM 120 or GEL 1 or 50 or SSC 100	II	4	
SSC 100	Principles of Soil Science	College-level course in each of CHE, PHY, BIS, and GEL rec	I	5	
Select one environmental policy course					
ESP 161	Environmental Law	One course in environmental science or political science recommended	III	4	
ESP 166	Ocean & Coastal Policy	ESP 1 or consent of instructor	I	3	
ESP 168A	Methods of Env Policy Evaluation	ESP 1 or ESP 10; STA 13 or 100; ECN 1A; ECN 100A recommended	I	5	
ESP 169**	Water Policy & Politics	ECN 1A or POL 1 recommended	III	3	
ESP 171	Urban & Regional Planning	ESP 1 recommended	III, IV	4	
ESP 172	Public Lands Management	ECN 1A and POL 1 recommended	I	4	
ESP 174	Environmental Justice Policy & Practice	ESP 1 or the 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	Varies	4	
Evolution					
EVE 100	Introduction to Evolution	BIS 2A-C; MAT 16A, 17A, or 21A; MAT 16B, 17B, or 21B; STA 100 rec	I, II, III, IV	4	
Conservation biology					
WFC 154	Conservation Biology	BIS 2B or equivalent	II	4	
Select one field experience course					
ENH 160/L	Restoration Ecology & Fieldwork	ESP 100 or 121 or 155 or EVE 101 or 117 or 119 or PLS 162 or 130	III	4/1	
ESP 123**	Intro to Field & Lab Methods in Ecology	ESP 100 or EVE 101 or equivalent; STA 13 or 100 or equivalent	III	4	
ESP 124	Marine and Coastal Field Ecology	Acceptance into the Bodega Marine Lab summer program	IV	3	
ESP 151L	Limnology Laboratory	ESP 151 (can be concurrent)	III	3	
EVE/ENT 180A**	Exp Ecology & Evolution in the Field	MUST take *both* EVE/ENT 180A *and* 180B	II	4	
PLS 130/L	Grassland Ecology & Fieldwork	PLS 2 or BIS 2B or BIS 2C or consent of instructor	II	3/1	
PLS 147/L	California Plant Communities & Fieldwork	PLS 2 or BIS 2C	III	3/1	
WFC 100	Field Methods in Wildlife, Fish, & Cons. Bio	EVE 101 or ESP 100 or equivalent; consent of instructor	III	4	
WFC 126*	Conservation in Working Landscapes	BIS 2B or consent of instructor, ESP 100 or EVE 101 recommended	I	4	

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Required Courses		Prerequisites	Qtr(s)	Units	Completed
Select one cross-cutting ecology course					
ESM 141**	Role of Fire in Natural Ecosystems	BIS 2A or PLS 2; BIS 2B or BIS 2C	II	4	
ESM/PLS 144	Trees & Forests	PLS 2 or BIS 2C	I	4	
ESP 124	Marine and Coastal Field Ecology	Acceptance into the Bodega Marine Lab summer program	IV	3	
ESP 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 155	Wetland Ecology	BIS 2A or equivalent; ESP 100 or EVE 101 recommended		4	
ETX 150	Evolution in Human-Altered Environments	BIS 2B	III	3	
EVE 109	Molecular Ecology	EVE 100		4	
EVE 115*	Marine Ecology	ESP 100 or EVE 101 or BIS 2B, or consent of instructor	II	4	
PLS 130	Grassland Ecology	PLS 2 or BIS 2B or BIS 2C or consent of instructor	II	3	
WFC 125**	Tropical Ecology & Conservation	ESP 100 or EVE 101	I	4	
WFC 151	Wildlife Ecology	BIS 2B or equivalent	I	4	
WFC 155	Animal Space Use & Habitat Conservation	EVE 101 or ESP 100 or equivalent; WFC 154 and ENH 160 rec	I	4	
WFC 168	Climate Change Ecology	BIS 2B; ESP 100 or EVE 101; or consent of instructor	II	4	
Select one organismal biology course					
ENT 103	Insect Systematics	Introductory course in zoology or entomology		3	
ENT 116	Freshwater Macroinvertebrates	BIS 2B or equivalent	III	3	
EVE 112**	Biology of Invertebrates	BIS 2B-C; courses in systematics, ecology, & evolution recommended	II	4	
EVE 114	Experimental Invertebrate Biology	Acceptance into the Bodega Marine Lab summer program	IV	3	
PLB/PLS 102‡	California Floristics	PLS 2 or BIS 2C or equivalent course in plant science	III	5	
PLB 116‡	Plant Morphology & Evolution	Introductory plant biology such as BIS 2C or PLS 2	II	5	
PLB/EVE 119*‡	Population Bio of Invasive Plants & Weeds	BIS 2A-C; elementary statistics course recommended	III	3	
WFC 110	Biology & Conservation of Wild Mammals	BIS 2A-C; EVE 101 or ESP 100 or equivalent (can be concurrent)	III	3	
WFC 111	Biology & Conservation of Wild Birds	BIS 2A-C; upper division ecology course recommended	I	3	
WFC 120	Biology & Conservation of Fishes	BIS 2A-C; upper division ecology course recommended	I	3	
WFC 134	Herpetology	BIS 2A-C; upper division ecology course recommended	II	3	

‡These are combined lecture/lab courses, an additional lab is not required if you complete one of these courses

Select one cross-cutting or organismal biology lab course					
ENT 116L	Aquatic Insect Collection	ENT 100L or 116 (can be concurrent)	III	2	
ESP 151L	Limnology Laboratory	ESP 151 concurrently	III	3	
EVE 112L**	Biology of Invertebrates: Lab	BIS 2B and 2C; EVE 112 concurrently	II	2	
EVE/ENT 180B**	Exp Ecology & Evolution in the Field	MUST take *both* EVE/ENT 180A *and* 180B	III	4	
WFC 110L	Biology & Cons of Wild Mammals Lab	WFC 110 (may be concurrent); consent of instructor	III	3	
WFC 111L	Biology & Conservation of Wild Birds Lab	WFC 111 (may be concurrent); consent of instructor	I	3	
WFC 120L	Biology & Cons of Fishes Lab	WFC 120 (may be concurrent); consent of instructor	I	2	
WFC 134L	Herpetology Laboratory	WFC 134 (may be concurrent); consent of instructor	II	3	

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Select one population ecology course					
ESP 121	Population Ecology	BIS 2B-C; MAT 16B or 17B or 21B or 21BH	II	4	_____
WFC 122	Population Dynamics & Estimation	MAT 16B or 17B or 21B; STA 13 or 100; BIS 2A, 2B, and 2C	III	4	_____
Select one community ecology course					
EVE 104	Community Ecology	ESP 100 or EVE 101	I	4	_____
EVE 115*	Marine Ecology	ESP 100 or EVE 101 or BIS 2B, or consent of instructor	II	4	_____
EVE/PLB 117	Plant Ecology	BIS 2A-C; PLB 111 recommended	I	4	_____
Select one ecosystems course					
ENH 160	Restoration Ecology	ESP 100 or 121 or 155 or EVE 101 or 117 or 119 or PLS 162 or 130	III	4	_____
ESP 151	Limnology	BIS 2A and 2B; BIS 2C and ESP 100 or EVE 101 recommended	III	4	_____
ESP 155	Wetland Ecology	BIS 2A or equivalent; ESP 100 or EVE 101 recommended		4	_____
EVE 147	Biogeography	BIS 2B		4	_____
HYD 143**	Echohydrology	HYD 141 or ESP 1 or ESM 108 or ESM 120 or GEL 1 or 50 or SSC 100	II	4	_____
PLS 162	Urban Ecology	Course in general or plant ecology	II	3	_____
PLS 163	Ecosystem and Landscape Ecology	ESP 100 or SSC 112 or EVE 117 or ESM 144 or PLS 162 or ENH 160	II	4	_____

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