

Climate Change and Air Quality (New)

Why study climate change and air quality?

The climate change and air quality track aims to train students in the physical and biological processes associated with global climate change and air quality, and to provide them with the necessary policy background to be able to understand the implications of global warming and climate change. Courses cover foundations of climatology and atmospheric science, air quality, hydrology, interaction between vegetation and the atmosphere, biogeography and evolution, biomes, and environmental policy making. This track would prepare students for a broad range of environmental and policy positions in the public and private sectors, such as the California Air Resource Board, U.S. Environmental Protection Agency, various county Air Quality Management Districts, environmental consulting firms, and graduate school in a broad range of environmental topics.



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	_____	<u>May test out of requirement</u>
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					
<i>Choose one of the following</i>					
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	_____	_____
Physics					
<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	_____	_____
Economics					
ECN 1A, 1AV, or 1AY	Principles of Microeconomics	I, II, III, IV	4	_____	_____
Mathematics					
MAT 16A and 16B	Short Calculus	I, II, III, IV	3, 3	_____	<u>Being phased out as of 23-24</u>
MAT 17A and 17B	Calculus for Biology & Medicine	I, II, III, IV	4, 4	_____	<u>MAT 17AB recommended</u>
MAT 19A and 19B and 19C	Calculus for Data-Driven Applications	I, II, III, IV	4, 4, 4	_____	<u>Must take A, B, and C</u>
MAT 21A and 21B	Calculus	I, II, III, IV	4, 4	_____	_____
Environmental Science and Policy					
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 (2024, 2026, 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	
Global Environment					
ESM 120	Global Environmental Interactions	One college-level chemistry and biology course	II	4	_____
Ecology					
<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	_____
Policy					
ESP 162	Environmental Policy	ECN 1A or ECN 1AV or ECN 1AY	II	4	_____
Statistics					
<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	_____
Environmental Monitoring					
<i>(Choose one of the following)</i>					
ATM 124	Meteorological Instruments & Observations	ATM 60	I	3	_____
ESM 108	Environmental Monitoring	ESP 100 or EVE 101 or SSC 100 or WFC 100 or equivalent	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					
<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	_____
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 lead faculty advisor	I, II, III, IV	2-6	_____

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 (2024, 2026, etc.)

Climate Change and Air Quality

NOTE: Courses taken for the depth subject matter or track cannot be used to fulfill more than one major requirement.

Required Courses	Prerequisites	Qtr(s)	Units	Completed	
Atmospheric science, complete all					
ATM 60	Introduction to Atmospheric Science	MAT 16A or 21A; PHY 7A or 9A	I	4	_____
ATM 116	Modern Climate Change	None	I	3	_____
ESM 131	Air as a Resource	CHE 10 or CHE 2A; CHE 2B	II	3	_____
Additional climate science and meteorology, choose two					
ATM 110*	Weather Observation & Analysis	ATM 60	II	4	_____
ATM 115**	Hydroclimatology	ATM 60	III	3	_____
ATM 133	Biometeorology	MAT 16B; one course in a biological discipline or consent of instructor	II	4	_____
ATM 160**	Intro to Atmospheric Chemistry	CHE 2B	II	4	_____
GEL 108	Paleoclimates	GEL 1 or 50 or 116N; CHE 2A	III	3	_____
Choose three environmental science courses, must select at least one from section A and one from section B					
A – Physical					
ESM 100	Principles of Hydrologic Science	CHE 2B; MAT 16B; PHY 7A or 9A	I	4	_____
ESM 121	Water Science & Management	PHY 10 or GEL 1	III	3	_____
ESP/GEL 116N	Oceanography	GEL 1 or 2 or 16 or 50	II	3	_____
ESP 152	Coastal Oceanography	Acceptance into the Bodega Marine Lab summer program	IV	3	_____
HYD 141	Physical Hydrology	PHY 9B, MAT 21B	I	4	_____
HYD 143**	Echohydrology	HYD 10 or 141 or ESP 1 or ESM 100 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 recommended	I	5	_____
B – Biomes					
ENH 160	Restoration Ecology	ESP 100 or 121 or 155 or EVE 101 or 117 or 119 or PLS 162 or 130	III	4	_____
ESM 141**	Fire Ecology	BIS 2A or PLS 2; BIS 2B or 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	_____
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	_____
EVE 147	Biogeography	BIS 2B		4	_____
EVE 149	Evolution of Ecological Systems	ESP 100 or EVE 101 or equivalent; EVE 100 or equivalent		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	_____
PLS 130*	Grassland Ecology	PLS 2 or BIS 2B or BIS 2C or consent of instructor, upper div standing	II	3	_____
PLS 162	Urban Ecology (not offered winter 24)	PLB 117 or ESP 100 or EVE 101 or EVE 120 or PLS 163	II	3	_____
WFC 168	Climate Change Ecology	BIS 2B; ESP 100 or EVE 101	II	4	_____

Continued on next page

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 (2024, 2026, etc.)

Required Courses		Prerequisites	Qtr(s)	Units	Completed
Choose two environmental policy courses					
ESP/ECI 163**	Energy & Env Aspects of Transportation	Upper division standing in environmental studies	I	4	_____
ESP 165	Climate Policy	ECN 1A or 1AV or ESP 1 or consent of instructor	I	3	_____
ESP 167**	Energy Policy	ECN 1A; MAT 16B or 17B or 21B or consent of instructor	II	4	_____
ESP 171	Urban & Regional Planning	ESP 1 or ESP 161 or ESP 179 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	I	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 (2024, 2026, etc.)