

The Earth Systems Minor, Sustainability Subplan

(35 units)

Core Classes (16 units)

EARTHSYS 10: Introduction to Earth Systems (4 units)

EARTHSYS 111: Biology and Global Change (4 units)

EARTHSYS 112: Human Society and Environmental Change (4 units)

(ECON 1 recommended but not required as a pre- or co-requisite to EARTHSYS 112)

SUST 210: Pursuing Sustainability: Managing Complex Social Environmental Systems (3 units)

(Prerequisites to SUST 210 for the minor: EARTHSYS 111, EARTHSYS 112)

EARTHSYS 131: Pathways in Sustainability Careers (1 unit)

Electives (19 units)

Students must take a minimum of 19 units of electives at the 100-level or above that address dimensions of environmental systems and social-environmental systems in theory or practice, with at least one course taken in each of the following four categories (Earth Systems Science/Engineering, Environmental Justice, Skills, and Applied Problem Solving). Students may double-count courses in these categories (i.e. if a course fulfills both the Environmental Justice and Applied Problem Solving requirements, it can be applied to both categories).

*Note that this list is not exhaustive, and students are welcome to petition other relevant courses at the 100-level or above for the minor. Relevant courses *below* the 100-level may be petitioned, if they were taken through the Bing Overseas Studies Program. Students may also petition one relevant freshman or sophomore introductory seminar.

Category 1: Earth Systems Science/Engineering

Bio 101: Ecology

Bio 105A: Ecology and Natural History of Jasper Ridge Biological Preserve

Bio 105B: Ecology and Natural History of Jasper Ridge Biological Preserve

Bio 115: The Hidden Kingdom- Evolution, Ecology, & Diversity of Fungi

Bio 137: Plant Genetics

Bio 143: Evolution

Bio 144: Conservation Biology: A Latin American Perspective (HUMBIO 112)

BIOHOPK 172H: Marine Ecology

BIOHOPK 173H: Marine Conservation Biology

BIOHOPK 177H: Dynamics and Management of Marine Populations

CEE 101B: Mechanics of Fluids

CEE 107A: Understanding Energy

CEE 162D: Introduction to Physical Oceanography

CEE 166A: Watersheds and Wetlands

CEE 166B: Floods and Droughts, Dams and Aqueducts

CEE 177: Aquatic Chemistry and Biology

CEE 263A: Air Pollution Modeling

CEE 263B: Numerical Weather Prediction

CEE 263C: Weather and Storms

CEE 274A: Environmental Microbiology I
EARTHSYS 116: Ecology of the Hawaiian Islands
EARTHSYS 117: Earth Sciences of the Hawaiian Islands
EARTHSYS 132: Evolution of Earth Systems
EARTHSYS 146A: Atmosphere, Ocean, and Climate Dynamics: The Atmospheric Circulation
EARTHSYS 146B: Atmosphere, Ocean, and Climate Dynamics: The Ocean Circulation
EARTHSYS 151: Biological Oceanography
EARTHSYS 152: Marine Chemistry
EARTHSYS 155: Science of Soils
EARTHSYS 158: Geomicrobiology
EARTHSYS 180: Principles and Practices of Sustainable Agriculture
EARTHSYS 256: Soil and Water Chemistry
EARTHSYS 323: Stanford at Sea [how many units?]
ENERGY 293A: Solar Cells, Fuel Cells, and Batteries: Materials for the Energy Solution (MATSCI 156)
ENERGY 293B: Fundamentals of Energy Processes
ENERGY 293C: Energy from Wind, Waves and Tides
ESS 123/223: Ecophysiology and Land Surface Processes
HUMBIO 113: The Human-Plant Connection
HUMBIO 130: Human Nutrition
ME 260: Fuel Cell Science and Technology
OSPAUSTL 10: Coral Reef Ecosystems
OSPAUSTL 25: Freshwater Systems
OSPAUSTL 30: Coastal Forest Ecosystems
OSPSANTG 58: Living Chile: A Land of Extremes

Category 2: Environmental Justice

ANTHRO 166: Political Ecology of Tropical Land Use
CSRE 100: Grassroots Community Organizing: Building Power for Collective Liberation, Solidarity, and Racial Justice
STS 131: Science, Technology, and Environmental Justice
EARTHSYS 118: Heritage, Environment, and Sovereignty in Hawaii
EARTHSYS 125/225: Shades of Green: Redesigning and Rethinking the Environmental Justice Movements (CSRE 125E)
EARTHSYS 136: The Ethics of Stewardship
EARTHSYS 194: Introduction to Environmental Justice: Perspectives on Race, Gender, Class and Place.
SOC 118: Social Movements and Collective Action
STS 131: Science, Technology, and Environmental Justice
ETHICSOC 180M: Collective Action Problems: Ethics, Politics, & Culture (PHIL 73, POLISCI 131A, PUBLPOL 304A)
ETHICSOC 234R: Ethics on the Edge: Business, Non-Profit organizations
ENVRES 212: Cities and Sustainability: Current Issues, Policy, and Law [L/PA]
ESS 270: Analyzing Land Use in a Globalized World
HISTORY 104: Introduction to Geospatial Humanities

HUMBIO 118: Theory of Ecological and Environmental Anthropology
IPS 270: The Geopolitics of Energy
INTNLREL 135A: International Environmental Law & Policy
LAW 2504: Environmental Law and Policy
LAW 2520: Climate Law and Policy
MS&E 294: Systems Modeling for Climate Policy Analysis [L/PA, EA]
OSPPARIS 74: Climate Change Challenges in France and Europe: from Project to Policy
OSPSANTG 71: Santiago: Urban Planning, Public Policy, and the Built Environment
POLISCI 124A: The American West
SIW 116: International Environmental Policy
SIW 144: Energy, Environment, Climate and Conservation Policy: A Washington, D.C. Perspective

*Category 3: Applied Problem Solving (*focus on project-based classes/classes that have a community engagement component)*

EARTHSYS 118: Heritage, Environment, and Sovereignty in Hawaii
CEE 171: Environmental Planning and Methods
CEE 175S: Environmental Entrepreneurship and Innovation
CEE 226: Life Cycle Assessment for Complex Systems
CSRE 100: Grassroots Community Organizing: Building Power for Collective Liberation
EARTHSYS 125/225: Shades of Green: Redesigning and Rethinking the Environmental Justice Movements (CSRE 125E)
EARTHSYS 130: Designing and Evaluating Community Engagement Programs for Social and Environmental Change
EARTHSYS 106: World Food Economy
EARTHSYS 138: International Urbanization Seminar: Cross-Cultural Collaboration for Sustainable Urban Development
EARTHSYS 160: Sustainable Cities
EARTHSYS 176: Open Space Management Practicum
EARTHSYS 187: FEED the Change: Redesigning Food Systems
EARTHSYS 196: Implementing Climate Solutions at Scale
EDUC 332: Theory and Practice of Environmental Education
SIW 144: Energy, Environment, Climate and Conservation Policy: A Washington, D.C. Perspective
URBANST 133: Social Entrepreneurship Collaboratory (MS&E 174)
URBANST 167: Green Mobilities for the Suburbs of the Future

Skills Categories	Description
C/E	Communication and Education
CD	Coding
D/S	Data Analysis and Statistics
DT	Design Thinking
EA	Economic Analysis
GIS/GA	GIS/Geospatial Analysis
LCA	Life Cycle Assessment
N/M	Negotiation/Mediation
L/PA	Legal/Policy Analysis
SESA	Social-Environmental Systems Analysis

Category 4: Skills

ANTHRO 160/260: Social and Environmental Sustainability: The Costa Rican Case [SESA]
 ANTHRO 162: Indigenous Peoples and Environmental Problems [SESA]
 ANTHRO 177: Environmental Change and Emerging Infectious Disease [SESA]
 BIO 141: Biostatistics [D/S]
 BIOHOPK 174H: Experimental Design and Probability [D/S, CD]
 CEE 100: Managing Sustainable Building Projects [LCA]
 CEE 107A: Understanding Energy (CEE 207A, EARTHSYS 103) [L/PA]
 CEE 124: Sustainable Development Studio [DT]
 CEE 171: Environmental Planning and Methods [N/M, PA]
 CEE 175S: Environmental Entrepreneurship and Innovation [SA, EA]
 CEE 176A: Energy Efficient Buildings [D/S]
 CEE 176B: Electric Power: Renewables and Efficiency [D/S]
 CEE 226: Life Cycle Assessment for Complex Systems [LCA]
 CSRE 100: Grassroots Community Organizing: Building Power for Collective Liberation [SA]
 EARTH 251: Negotiation [N/M]
 EARTHSYS 106: World Food Economy [EA]
 EARTHSYS 116: Ecology of the Hawaiian Islands [D/S, SA]
 EARTHSYS 117: Earth Sciences of the Hawaiian Islands [D/S]
 EARTHSYS 125/225: Shades of Green: Redesigning and Rethinking the Environmental Justice Movements (CSRE 125E) [SA, DT]

EARTHSYS 135: Podcasting the Anthropocene [C/E]
EARTHSYS 138: International Urbanization Seminar: Cross-Cultural Collaboration for Sustainable Urban Development [SA]
EARTHSYS 141: Remote Sensing of the Ocean [D/S, GA]
EARTHSYS 142: Remote Sensing of Land [D/S, GA]
EARTHSYS 149: Wild Writing [C/E]
EARTHSYS 160: Sustainable Cities [SA]
EARTHSYS 175: California Coast: Law, Science, and Policy [SA, PA]
EARTHSYS 176: Open Space Management Practicum [SESA]
EARTHSYS 177C: Specialized Writing and Reporting: Environmental Journalism [C/E]
EARTHSYS 185: Feeding Nine Billion [D/S]
EARTHSYS 187: FEED the Change: Redesigning Food Systems [DT]
EARTHSYS 188: Social and Environmental Tradeoffs in Climate Decision-Making [SA]
ECON 106: World Food Economy [EA]
ECON 155: Environmental Economics and Policy [EA]
ECON 159: Economic, Legal, and Political Analysis of Climate-Change Policy [EA]
EDUC 332: Theory and Practice of Environmental Education [C/E]
EDUC 357: Science and Environmental Education in Informal Contexts [C/E]
ENERGY 293C: Energy from Wind, Waves and Tides [CD]
ENVRES 212: Cities and Sustainability: Current Issues, Policy, and Law [L/PA]
ENVRES 220: The Social Ocean: Ocean Conservation, Management, and Policy [L/PA]
ESS 107: Control of Nature (EARTHSYS 107) [SESA]
ESS 124/224: Remote Sensing of Hydrology [D/S, GA]
ESS 165: Advanced Geographic Information Systems [GA]
ESS 270: Analyzing Land Use in a Globalized World [D/S]