MINOR IN ENVIRONMENT AND SUSTAINABILITY

The Environment and Sustainability Minor (E&S Minor) provides an integrative foundation in the scientific, engineering, social, and humanistic dimensions of humanity's interaction with the environment. The minor will equip students with knowledge and experience that will make it possible to understand, diagnose, and develop solutions to complex problems faced by society as it strives for social and environmental sustainability. Students who complete the minor will be prepared to apply the principles of sustainability in diverse workplace contexts, including business/industry, government, civil society, and academia.

The E&S Minor combines a wide range of fields of inquiry to directly engage environmental and climate challenges facing ecosystems and populations around the globe. Fundamentally, these challenges affect both human systems and the earth systems on which we depend: people and the planet. Planetary challenges include global changes in the climate and oceans, degradation to both biodiversity and material resources, and fundamental transformations of biogeochemical cycles. Challenges facing society include (but are not limited to) widespread and intransigent environmental injustice, expanding urban and agricultural pollution, technological and economic lock-in of infrastructure and all manner of production and consumption systems, and a global dependence on carbon intensive energy.

The minor prioritizes integrative, interdisciplinary learning that is critical for effectively understanding and addressing the complexities of environmental issues today and in the future, and is structured on four pillars: Earth Systems and Climate Science, Environmental Governance, Environmental Histories and Cultures, and Engineering for Sustainability.

The E&S Minor is comprised of five subjects (a minimum of 57 units). Students take two core subjects that address the fundamentals of each pillar, and select a minimum of 36 units of elective subjects to craft a program that reflects their own particular interests. In consultation with the minor advisor, students may either concentrate in one of the four pillars or explore various areas by selecting classes from multiple pillars.

Requirements

Curriculum		
12.387[J]	People and the Planet: Environmental Governance and Science	9
11.004[J]	Past, Present, and Future of the Environment and Integration with Society	12
In consultation with the minor advisor, select a minimum of 36 units from the list of electives		36-39
Total Units		57-60

Electives		
Earth Systems and Climate Science		
1.018A[J] & 1.018B[J]	Fundamentals of Ecology I and Fundamentals of Ecology II	12
1.078	Introduction to Soil Science	12
1.080A & 1.080B	Environmental Chemistry I and Environmental Chemistry II	12
1.089 or 1.089A	Environmental Microbiology Environmental Microbiology I	6-12
2.981	New England Coastal Ecology	3
3.982	The Ancient Andean World [1]	9
8.21	Physics of Energy	12
12.000	Solving Complex Problems [2]	9
12.001	Introduction to Geology	12
12.002	Introduction to Geophysics and Planetary Science	12
12.003	Introduction to Atmosphere, Ocean, and Climate Dynamics	12
12.007	Geobiology: History of Life on Earth	12
12.021	Earth Science, Energy, and the Environment	12
12.102	Environmental Earth Science	12
12.104	Geochemistry of the Earth and Planets	12
12.120	Environmental Earth Science Field Course	6
12.170	Essentials of Geology	12
12.174	Biogeochemistry of Natural and Perturbed Systems	12
12.307	Weather and Climate Laboratory	12
12.335	Experimental Atmospheric Chemistry	12
12.349	Mechanisms and Models of the Global Carbon Cycle	12
12.385	Science, Politics, and Environmental Policy [3]	9
20.106[J]	Systems Microbiology	12
EC.714	D-Lab: Earth [2, 3]	6
Environmental Governance		
1.801[J]	Environmental Law, Policy, and Economics: Pollution Prevention and Control	12
1.802[J]	Regulation of Chemicals, Radiation, and Biotechnology	12

11.123	Big Plans and Mega-Urban Landscapes	9
11.142	Geography of the Global Economy	12
11.148	Environmental Justice: Law and Policy	12
11.162	Politics of Energy and the Environment	12
12.385	Science, Politics, and Environmental Policy [4]	9
17.181	Sustainability: Political Economy, Science, and Policy	12
17.309[J]	Science, Technology, and Public Policy	12
17.411	Globalization, Migration, and International Relations	12
21A.410	Environmental Struggles	12
EC.701[J]	D-Lab: Development [1, 2]	12
EC.711[J]	D-Lab: Energy [2]	12
EC.714	D-Lab: Earth [2, 4]	6
EC.715	D-Lab: Water, Sanitation, Hygiene and Environmental Innovations for the Common Good [1, 2]	9
EC.716	D-Lab: Waste [2]	9
EC.733[J]	D-Lab: Supply Chains [2]	12
IDS.062[J]	Global Environmental Negotiations	6
Environmental Histories and Cultures		
1.016[J]	Design for Complex Environmental Issues: Building Solutions and Communicating Ideas [2]	9
3.094	Materials in Human Experience [2]	9
3.982	The Ancient Andean World [4]	9
3.983	Ancient Mesoamerican Civilization [2]	9
4.622	Islamic Gardens and Geographies	12
10.04	A Philosophical History of Energy	12
10.05	Foundational Analyses of Problems in Energy and the Environment	12
11.016[J]	The Once and Future City	12
17.051	Ethics of Energy Policy	12
24.03	Good Food: The Ethics and Politics of Food	12
21A.155	Food, Culture, and Politics	12
21A.303[J]	The Anthropology of Biology	12
21G.417	Cultural Geographies of Germany: Nature, Culture, and Politics	12
21H.185[J]	Environment and History	12
21H.380[J]	People and Other Animals	12
21H.383	Technology and the Global Economy, 1000-2000	12
21L.449	The Wilds of Literature	12
21W.012	Writing and Rhetoric: Food for Thought	12
21W.036	Science Writing and New Media: Writing and the Environment	12
21W.775	Writing about Nature and Environmental Issues	12
EC.701[J]	D-Lab: Development [2, 3]	12
EC.715	D-Lab: Water, Sanitation, Hygiene and Environmental Innovations for the Common Good [2, 3]	9
SP.360	Terrascope Radio	12
STS.009	Evolution and Society	12
STS.032	Energy, Environment, and Society	12
Engineering for Sustainability		
1.007	Big Engineering: Small Solutions with a Large Impact	6
1.011	Project Evaluation and Management	12
1.016[J]	Design for Complex Environmental Issues: Building Solutions and Communicating Ideas [1]	9
2.00A	Fundamentals of Engineering Design: Explore Space, Sea and Earth	9
2.627	Fundamentals of Photovoltaics	12
3.094	Materials in Human Experience [1]	9
3.983	Ancient Mesoamerican Civilization [1]	9
4.401	Environmental Technologies in Buildings	12
4.411[J]	D-Lab Schools: Building Technology Laboratory	12
4.42[J]	Fundamentals of Energy in Buildings	12
4.432	Modeling Urban Energy Flows for Sustainable Cities and Neighborhoods	12
12.000	Solving Complex Problems [4]	9
12.213	Alternate Energy Sources	6
22.033	Nuclear Systems Design Project	15
22.04[J]	Social Problems of Nuclear Energy	12
22.081[J]	Introduction to Sustainable Energy	12
EC.701[J]	D-Lab: Development [1, 3]	12
EC.711[J]	D-Lab: Energy [3]	12
EC.714	D-Lab: Earth [3, 4]	6
EC.715	D-Lab: Water, Sanitation, Hygiene and Environmental Innovations for the Common Good [1, 3]	9
EC.716	D-Lab: Waste [3]	9
EC.733[J]	D-Lab: Supply Chains [3]	12

[1] *Subject also counts toward Environmental Histories and Cultures.*

[2] *Subject also counts toward Engineering for Sustainability.*

[3] *Subject also counts toward Environmental Governance.*

[4] *Subject also counts toward Earth Systems and Climate Science.*

A minimum of four subjects (or 48 units) taken for the Environment and Sustainability minor cannot also count toward a student's major or other minor.

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