Duria Antiquior – A More Ancient Dorset, 1830, Museum of Wales

Environmental Analysis Course Plans

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EA-Economics Course Plan

Faculty Advisor

Bowman Cutter (on leave 2021-22)

Affiliated Faculty

John Jurewitz
Stephen Marks (on leave fall 2021)

Description

The most important questions concerning the environment often concern the interactions between production, consumption, and the environment. Economics provides the analytical and computational tools to understand how economic and policy decisions affect the environment and in turn how the environment affects the economy. Students in EA-Econ often go on to careers in energy, environmental consulting, urban planning, and other careers that require an understanding of the linkages between economics, the environment, and human well-being.

Course Requirements (13 courses)

Students must complete the core courses, EA10, EA20, and EA30 and the one senior capstone course (EA 190 or 191). EA-Econ students must take the methods requirement prior to the senior capstone course. In addition, EA-Econ majors are required to take the following courses:

- ECON 051 PO – Introduction to Macroeconomics
- ECON 052 PO – Introduction to Microeconomics
- ECON 057 PO – Economics Statistics
- ECON 102 PO – Microeconomic Theory

Two courses from the following list:

- ECON124 PO - Water, Resources, Economics and Management
- ECON125 PO - Natural Resource Economics and Policy
- ECON127 PO - Environmental Economics
- ECON128 PO - Energy Economics and Policy

One higher-level methods course in economics:

- ECON107 PO - Applied Econometrics
- ECON167 PO – Econometrics
- Or a 150+ course.

One of the following courses or an acceptable substitute:

Politics and Public Policy

- PPA 01 PO - Introduction to Public Policy Analysis
- POLI 39 PO - Environmental Justice
- Politics 60 – Global Politics of Food & Agriculture
- POLI 61 PO - Global Politics of Water
- POLI 71- NGOs and Transnational Politics
- POST 140 HM - Global Environmental Politics

Anthropology

- ANTH 144 – Anthropology of Environmental Justice

Values and Ethics

- PHIL 37 PO - Values and Environment

Natural Sciences (higher level environment-related science courses with prerequisites are likely to be approved; please clear with advisor)

- EA 085- Food, Land and the Environment
- GEOL 20C - Introduction to Geology: Environmental Geology
- GEOL 20D – Climate Change
- BIO 1D – Ecology for Non-Majors with Lab
- CHEM 112 - Analysis of Scientific Literature

Environmental Analysis-Race, Class, and Gender Course Plan

Faculty Advisor

Zayn Kassam, Religious Studies

Affiliated Faculty

Guillermo Douglass-Jaimes, Environmental Analysis

Erin Runions, Religious Studies

Description

Student in this Concentration will be taught to understand implications of race, class, and gender on environmental problem-solving and decision making. Apply theory and approaches in analyzing race, class, and gender to clarify and respond to environmental issues. Students will read, critically evaluate, synthesize, and analyze environmental issues using the scholarly literature on race, class and gender constructions.

Course Requirements (14 courses)

Students must complete the core courses, EA10, EA20, and EA30 and one senior capstone course (EA 190 or 191). In addition, Race, Class, and Gender EA students shall take a minimum of the following additional 10 courses for the Concentration:

- One Environmental Justice Course
    - EA 86 PZ Environmental Justice, or one of the following (consult with advisor):
        - GWS 172 PO Race, Gender, & The Environment
        - ANTH144 PO Anthropology of Environmental Justice
        - EA 099 PO Urban Health Equity
        - RLST166A Divine Body: Religion and Environment

- Three courses in Area Studies or Studies, one of which must be introductory, and two of which must be in the same program or department:
    - Chicana/o-Latina/o Studies Department
    - Asian American Studies
    - Asian Studies
    - Africana Studies
    - Russian and Eastern European Studies
    - Middle Eastern Studies
    - German Studies
    - Latin American Studies

- Three courses on gender studies
    - GWS 26 PO - Introduction to Women's Studies
    - Two other courses focused on gender studies, preferably in GWS

- Three courses that focus on class (by agreement with advisor), e.g. Labor History, Economics of Labor, Globalization, and Colonization

Environmental Biology Course Plan

Faculty Advisor(s):

Nina Karnovsky, Biology

Affiliated Faculty:

Charlotte Chang, Biology

Fran Hanzawa, Biology

Wallace Meyer, Biology

Rachel Levin, Biology, Neuroscience

Description

In the EA Biology concentration, students will focus their Environmental Analysis major by incorporating the biological sciences into their training, and focusing on methods of biological inquiry and understanding biological concepts.

Course Requirements

Students must complete the core courses, EA10, EA20, and EA30 and the senior capstone course (option for clinic or thesis). EA-Biology majors are required to take the following courses:

- CHEM 1A,B, General Chemistry, or 51, Accelerated General Chemistry
- BIOL 40 PO - Introduction to Genetics w/lab
- BIOL 41E, Introductory Ecological and Evolutionary Biology w/lab
- BIOL 104 PO - Conservation Biology w/lab

- Three of the following (one of which can be a seminar):
    - BIOL 106 PO Aquatic Ecology w/lab
    - EA 173 Ecology of Streams, Lakes and Wetlands w/lab
    - BIOL 103PO - Invasion Biology
    - BIOL 107 PO - Avian Ecology w/lab
    - BIOL 112 PO - Advanced Animal Ecology w/lab
    - BIOL 116 PO - Ecology and Evolution of Plants w/lab
    - BIOL 121 PO - Insect Ecology and Behavior w/lab
    - BIOL 125 PO - Animal Behavior w/lab
    - BIOL 132 PO - Vertebrate Biology w/lab

    - BIOL 140 PO - Animal Physiology w/lab*
    - BIOL 166 PO - Plant Physiology w/lab*
    - BIOL169 PO - Developmental Biology w/lab*
    - BIOL 180 - PO Microbial Ecology w/lab
    - BIOL 181 - Fire Ecology of SoCal
    - BIOL 189E PO - Global Change Biology
    - GEOL 20C Intro to GEOL; Environmental Geology; or GEOL 20E Oceanography; or GEOL 20G Climate Change
- *These courses have 41C PO Intro Cell Chemistry and Cell Biology w/lab as a prerequisite.
- One of the following courses is required:
    - ECON 125 PO - Natural Resource Economics and Policy*
    - ECON 127 Environmental Economics**
    - ECON 128 PO - Energy Economics and Policy*
- prerequisite ECON 052 PO, **prerequisite ECON 052 PO or ECON 102 PO

One of the upper division bio courses can be satisfied with a course from a study abroad program or domestic program. Pomona students may take courses that count towards the major at the other 5Cs if it is not offered at Pomona College.

The EA-Biology faculty also strongly recommend taking organic chemistry (CHEM 110A and 110B), mathematics and statistics (MATH 31 or MATH 60 and MATH 58 or MATH 58B) and ECON 51, Microeconomics.

Environmental Chemistry Course Plan

Faculty Advisor(s)

Chuck Taylor, Chemistry

Affiliated Faculty

Marc Los Huertos, Environmental Analysis

Description

The EA/Chemistry provides students tools for understand the transport and fate of toxins in the environment, including heavy metals, metalloids, and natural and synthetic organic chemicals mobilized by manufacturing, mining, drilling, and combustion.

Course Requirements (15 to 16 courses)

Students must complete the core courses, EA10, EA20, and EA30 and one senior capstone course (EA 190 or 191). EA-Chemistry students must take two upper level laboratory courses to prepare for the senior capstone courses. In addition, EA-Chemistry majors are required to take the following courses:

In addition, students are required to take a minimum of the following:

- Either of the following:
  - CHEM 01A PO and CHEM 1B PO - General Chemistry; or
  - CHEM 051, Accelerated General Chemistry
- One from
  - CHEM 106 PO - Environmental Chemistry; or
  - CHEM 139 KS, Chemistry and the Environment
- CHEM 110A PO - Organic Chemistry 1
- One from
  - CHEM 110B PO - Organic Chemistry 2
  - CHEM 115 - Biochemistry
- CHEM 156 – Physical Chemistry in Molecular Biology
- CHEM 161 - Advanced Analytical Chemistry
- CHEM 191- PO-36 – Senior Literature Thesis
- MATH 30 – Calculus I
- MATH 31 - Calculus II
- PHYS 41 – General Physics I
- PHYS 42 – General Physics II

Geology and the Environment Course Plan

Faculty Advisor

Jade Star Lackey

Affiliated Faculty

Robert Gaines

Eric Grosfils

Linda Reinen

Description

The Geology and the Environment concentration is designed for students interested in the interaction of humans with Earth's geology and physical systems.

Course Requirements (12+ courses)

Students must complete the core courses, EA10, EA20, and EA30 and one senior capstone course (EA 190 or 191). In addition, EA-Geology majors are required to take the following courses:

- GEOL 20 (any of A through G) or GEOL 15 – Living on the Edge: Earthquakes and Water in Southern California

- Four of the following:
    - GEOL 112 – Remote Sensing
    - GEOL 120 – Introduction to Geochemistry
    - GEOL 125 – Earth History
    - GEOL 183 – Sedimentology
    - GEOL 189C – Oceans on a Habitable Planet: Past and Present
    - EA 104 KS – Oceanography
    - EA 103 KS – Soils and Society

- EA101 PO – Just! GIS or GEOL 189G – Introduction to GIS for Geologists

- Two within one of the following interface areas (not a comprehensive list—clear substitutes in consultation with advisor):

    - Biogeochemistry
        - BIOL 41E PO – Ecology (has prerequisite)
        - BIOL 105 – Fire Ecology (has prerequisite)
        - BIOL 116 – Ecology and Evolution of Plants (has prerequisite)
        - BIOL 121 – Insect Ecology and Behavior (has prerequisite)
        - BIOL 180 – Microbial Ecology (has prerequisite)
        - BIOL 189E – Global Change Biology (has prerequisite)
        - CHEM 51 – Accelerated Chemistry

- CHEM 106 – Environmental Chemistry (has prerequisite)
- CHEM 139 KS – Environmental Chemistry (has prerequisite)
- EA173 PO - Ecology of Streams, Lakes and Wetlands

- History and Social Sciences

  - ANTH 12 PZ – Native Americans and their Environments
  - ANTH 144 – Anthropology of Environmental Justice
  - EA 171 – Water in the West
  - ECON 52, Microeconomics
  - ECON 127 PO or ECON 172 PZ- Environmental Economics (has prerequisite)
  - ECON 128 PO – Energy Economics and Policy (has prerequisite)
  - HIST 16 PZ – Environmental History
  - HIST 68 – Disasters in the Ancient Mediterranean
  - HIST 96 – The Amazon
  - HIST 101 ACPO– Dark Ecologies
  - HIST 101E – Science and Empire
  - HIST 101F – Food and the Environment in Asia and the Pacific
  - HIST 112 PZ – Energy and Humanity: Past, Present and Future
  - HIST 118 or HIST 120 CM – Native American History
  - HIST 120 CM – History of the American West
  - HIST 184 – Global Environmental Histories
  - PPA 01 PO – Introduction to Public Policy Analysis
  - POL 60 – Global Politics of Food and Agriculture
  - POL 61 – Global Politics of Water
  - POST 140 HM – Global Environmental Politics
  - STS 124S HM – U.S. Science and Technology Policy

- Values and Ethics
  - PHIL 37 PO – Values and Environment
  - PHIL 103 – Philosophy of Science
  - PHIL 190 CM – Science, Values, and Democracy
  - RLST166A PO – The Divine Body: Religion and the Environment
  - STS 10 HM – Introduction to Science, Technology, and Society

Environmental Physics and Engineering Course Plan

Faculty Advisor(s)

Dwight Whittaker

Affiliated Faculty

Thomas Moore

Janice Hudgings

Phil Choi

David Tanenbaum

Description

This concentration enables students to understand the physics of Earth's planetary systems, such as its atmosphere, oceans, groundwater basins, and the soils, rock and living systems in the critical zone.

Course Requirements (13 courses)

Students must complete the core courses, EA10, EA20, and EA30 and the one senior capstone course (EA 190 or 191). In addition, EA- Physics/Engineering majors are required to take the following courses:

- MATH 030, MATH031, MATH32, and MATH 060
- Complete one of the following introductory physics series:
    - PHYS 041 PO and PHYS 042 or
    - PHYS 070 PO, PHYS 071 PO, and PHYS 072 PO
- PHYS 101 – Foundations of Modern Physics

Two elective physics courses with a course number above 10. Examples include:

- PHYS 165 – Introduction to Physical Hydrodynamics
- PHYS 166 HM - Geophysics

One topics course in any field adjacent to physics and engineering. Examples include:

- GEOL 189C – Oceans on a Habitable Planet: Past and Present (has a prerequisite)
- ECON 127 – Environmental Economics (has a prerequisite)
- ECON 128 – Energy Economics and Policy (has a prerequisite)
- BIO 189E – Global Climate Change Biology
- STS 10 – Introduction to Science, Techology, and Society
- STS 124S HM – U.S. Science and Technology Policy

Quantitative Environmental Analysis Advising and Approved Course Plan

Faculty Advisor

Gabriel Chandler, Math

Affiliated Faculty

Jo Hardin

Ami Radunskaya

Description

Students learn to use mathematical tools and techniques to understand the real-world processes and implications of environmental problem-solving and decision making; apply mathematical and statistical models to clarify and respond to environmental issues; and read, critically evaluate, synthesize, and analyze a range of issues based on data and literature in the mathematical sciences.

Course Requirements (12 or 13 courses)

Students must complete the core courses, EA10, EA20, and EA30 and one senior capstone course (EA 190 or 191). In addition, EA-Math majors are required to take the following courses:

- MATH 032, Calculus III or Math 067, Vector Calculus
- MATH 060, Linear Algebra
- MATH 102, Differential Equations and Modeling
- MATH 158, Statistical Linear Models

For students pursuing depth in statistics and/or modelling, four from:

MATH 151, MATH 152, MATH 154, MATH 155, MATH 156 HM, MATH 158, MATH 160 CM, MATH 165 HM, MATH 180, MATH 181, MATH 183, MATH 185, MATH 186 HM, MATH 187, MATH 188 HM

For students pursuing applied mathematics in quantitative fields, two from the previous list and three from one of the following sub-concentrations:

a) Math and Biology sub-concentration: BIOL 040 and 041 or KS 044 and 150 and a choice of: BIOL 104, 112, 116, 121, 131, 125, 153

b) Math and Economics sub-concentration: ECON 051, ECON 052, ECON 127, ECON 128, ECON 142 CM, ECON 154, ECON 159, ECON 171 CM, ECON 172 PZ

c) Math and Geology sub-concentration: GEOL 020C or GEOL 020A, GEOL 112, GEOL 120, GEOL 125, 189 C, plus one additional Geology course of choice

Sustainability and the Built Environment Course Plan

Faculty Advisors

Guillermo Douglass-Jaimes, Environmental Analysis

Char Miller, History

Affiliated Faculty

George Gorse, Art History

Lance Neckar (Pitzer)

Description

The Sustainability and the Built Environment Concentration (SBE) focuses on urban planning, design and architecture.

The SBE course plan interrogates the built environment, whether urban, suburban, or rural (and every place in between). It is designed for students seeking a comprehensive curriculum that is focused on how to plan, design, construct and manage communities from a more sustainable perspective. Learn about the latest planning approaches and policy/regulatory requirement; green architecture, sustainable site design and landscapes; renewable energy and energy efficiency; sustainable water resources management; and green infrastructure. Acquire the skills necessary to integrate sustainable design principles into long-range visions and the day-to-day development and management of the built environment.

Course Requirements (11 courses)

The students must take the three core courses (EA 10, 20, and 30); and one senior capstone course (EA 190 or 191). The elective classes in SBE should be selected in close consultation with the Concentration adviser.

- At least one course in Representation
    - Studio art, photography, design, or production-based media studies courses
    - GIS or similar spatial-analysis training
- At least one class in Design Studio/Labs
    - EA 185B, ART 130PZ or similar classes
- Five electives from the following or similar options, generally no more than two from a group:
    - Urban history, geography, theory and ecology
    - Design and Planning
    - Environmental Justice/Policy/Economics/Sociology

Some Cool Classes:

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- ART 21, Foundations of 2D Design
- ARHI 188 SC, Representing the Metropolis
- EA 99 Introduction to Urban Health Equity: Uncovering Local and Global Disparities
- EA 101 Just! GIS

- POL 61 Global Politics of Water
- ANTH 144 Anthropology of Environmental Justice
- EA 171 Water in the West
- EA 174 Building Los Angeles
- ARHI 179 Modern Architecture, City, Landscape, and Sustainability
- EA 180 Green Urbanism
- GEOG 179B HM Place, Power and Difference

Values and the Environment Course Plan

Faculty Advisor

Laura Perini, Philosophy

Affiliated Faculty

Heather Williams, Politics

Julie Tannenbaum, Philosophy

Description

The Values and the Environment concentration enables students to explore the ethical, legal, social and historical frameworks that have shaped and are shaping urban, agricultural, and natural or quasi-natural environments, as well as the cell-based bodies of plants, animals, fungi and microbes. Students will also focus on economic and health inequalities of human societies created by state forms, market arrangements, and historically-embedded caste systems.

Course Requirements (10 courses)

Students must complete the core courses, EA10, EA20, and EA30 and one senior capstone courses (EA 190 or 191). Students must also take the following:

Three from:

- EA 99 - Introduction to Urban Health Equity: Uncovering Local and Global Disparities
- EA 101 – Just! GIS
- EA 174 - Building Los Angeles
- PHIL 37 – Values and the Environment
- PHIL 38 - Bioethics
- RLST 40 - Religious Ethics;
- PHIL 57 JT - Philosophy of Technology
- PHIL 104 PO - Philosophy of Science Topics or PHIL 103 – Philosophy of Science
- PHIL 190 CM – Science, Values, and Democracy
- RLST166A PO - The Divine Body: Religion and the Environment
- STS 10 HM – Introduction to Science, Technology, and Society

Three from:

- ANTH 12 PZ – Native Americans and their Environments
- ANTH 144 – Anthropology of Environmental Justice
- ARHI 179 – Modern Architecture, City, Landscape, and Sustainability
- EA 171 – Water in the West
- ECON 52 - Microeconomics
- ECON 127 PO or ECON 172 PZ- Environmental Economics (has prerequisite)

- ECON 128 PO - Energy Economics and Policy (has prerequisite)
- HIST 16 PZ – Environmental History
- HIST 68 – Disasters in the Ancient Mediterranean
- HIST 96 – The Amazon
- HIST 101 ACPO- Dark Ecologies
- HIST 101E -Science and Empire
- HIST 101F – Food and the Environment in Asia and the Pacific
- HIST 112 PZ – Energy and Humanity: Past, Present and Future
- HIST 118 or HIST 120 CM – Native American History
- HIST 120 CM – History of the American West
- HIST 184 – Global Environmental Histories
- PPA 01 PO - Introduction to Public Policy Analysis
- POLI 60 – Global Politics of Food and Agriculture
- POLI 61 – Global Politics of Water
- POLI 71 – NGOs and Transnational Politics
- POLI 159 – Diversity and Democracy
- POST 140 HM – Global Environmental Politics
- SOC 75 – Social and Political Movements
- SOC 122 PZ– Sociology of Health and Medicine
- SOC 124 PZ – Race, Place, Space
- STS 124S HM – U.S. Science and Technology Policy

Environmental History Course Plan

Faculty Advisor

Char Miller

Affiliated faculty

Pey-yi Chu
Arash Khazeni

This concentration within PO-EA is designed to appeal to students interested in studying the relationships between humans and their environments over time—and to do so utilizing the methods and frameworks of Environmental Analysis and History. In consultation with their adviser, students will complete a minimum of 12 classes, including the four EA Core courses, five in the History concentration, and three in related fields.

A. EA Core:
   EA 10; EA 20; EA 30L
   EA 191 Thesis or EA 190 Senior Seminar

B. History Concentration: in consultation with their adviser, students will take five courses from among those currently offered or similar classes:

   HIST 184, Global Environmental Histories (Chu)
   HIST 101E, Science and Empire (Chu)
   HIST 101ACPO, Dark Ecologies (Khazeni)
   HIST 101A, Indian Ocean World (Khazeni)
   HIST 142 The Sea Through Time (Khazeni)
   EA 170, US Environmental History (Miller)*
   EA 171, Water in the West (Miller)
   EA 174 Building Los Angeles (Miller/Groves)
   HIST 96, The Amazon (Sarzynski, CMC)
   HIST 101F, Food and Environment (Yamashita)
   HIST 331 CGU Environment and Indigeneity (Poblete, CGU)
   HIST 113 CM, US Environmental History (Venit-Shelton, CMC)*
   Human Health and Disease in US History (Venit-Shelton, CMC)
   HIST 158 PZ, Ecological History (Urmi Engineer Willoughby, PZ)
   HIST 55 PZ, Disease and Disasters in North American History (Willoughby)
   HIST TBA PZHistorical Epidemiology (Willoughby)
   HIST TBA PZ History of Agriculture (Willoughby)

* Students may only take one of these courses for the Environmental History major

HIST 118, Native American History (Reidy)
HIST 16 PZ Environmental History

* NB: Only one of these classes may count toward a student's environmental-history concentration

Related Fields: in consultation with their adviser, students will take three environment-themed classes from such departments as Anthropology, Art History, English, German and Russian, Geology, Philosophy, Politics, and Religion.