

THE EARTH INSTITUTE
COLUMBIA UNIVERSITY

Special Concentration in Sustainable Development

Fall 2009



Special Concentration in Sustainable Development Information Packet

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Special Concentration in Sustainable Development Overview

A special concentration in sustainable development is available for undergraduate students at Columbia College and the School of General Studies. The Earth Institute at Columbia University has collaborated with the departments of Earth and Environmental Sciences; Ecology, Evolution, and Environmental Biology; International and Public Affairs; and Earth and Environmental Engineering to offer this new program of study. The special concentration will allow students to draw upon classes in a wide range of disciplines including political science, anthropology, environmental science and economics. The courses required for the special concentration are designed to provide Columbia students with an understanding of the theory and practice of sustainable development, stimulate a critical examination of the historical and conceptual antecedents, provide experience with complex development challenges through direct engagement, and help students imagine and create alternative futures for our rapidly changing world.

How to undertake a Special Concentration in Sustainable Development

The first step to take is to email cqa2@columbia.edu to let Catherine Aldrich, the program manager, know of your interest. We will add you to the program listserv so you can learn about upcoming events and programming. We will also put you in touch with the program director and, when necessary, another advisor from the program's interschool committee, based on your specific interests. Students should always consult with their advisor at Columbia College or General Studies to ensure that they are making satisfactory progress toward general core requirements while pursuing the concentration.

Program of study: The special concentration in sustainable development is not a stand-alone concentration; it is intended to serve as a complement to the disciplinary specialization and methodological training inherent in a concentration or major. In order to graduate, a student must complete a concentration or major in addition to the special concentration. Students wishing to complete a special concentration in sustainable development will work with a program advisor to decide upon course selection and sequencing. The program office will provide and keep on record a planning form to track the fulfillment of requirements for the special concentration.

Courses: A total of nine courses plus one practicum are required. The academic program is structured to provide students with grounding in both natural and social science *systems*, followed by a variety of elective courses that address *stresses and solutions*. It also teaches skills through the GIS class and the team-based "Sustainable Development Workshop," as well as *synthesis*, also through the workshop. Students gain experience in the practice of sustainable development through the 1-point practicum or internship.

A full list of required courses and electives can be found online on the Columbia College and General Studies bulletins. More information is also available on the program website:

http://www.gs.columbia.edu/bulletin_courses/Bulletin98/susdev.htm

<http://www.college.columbia.edu/bulletin>

Program Contacts

Kevin Griffin, Interim Program Director – griff@ideo.columbia.edu – 845-365-8371

Catherine Aldrich, Program Manager, Office of Academic and Research Programs at The Earth Institute – cqa2@columbia.edu – 212-854-9610

Fall 2009 Office Hours

Please stop by to meet with Prof. Griffin on Wednesdays, 2:00 to 3:30 pm in 1408 of the International Affairs Building

Special Concentration in Sustainable Development

Frequently Asked Questions

What is 'sustainable development'?

Sustainable development is defined by the Brundtland Commission (1987) as "meeting the needs of the present without compromising the ability of future generations to meet their own needs."

Today, over 1 billion people live on less than \$1 a day, and life expectancy in nine African countries is less than 40 years. Meanwhile, the actions of the rich world, such as loading the atmosphere with carbon dioxide, are compromising the well-being of future generations and pushing our planet toward an uncertain future.

Global pandemics, climate change, natural disasters, poor soil conditions, deforestation — these issues are at the heart of sustainable development.

What is the Earth Institute?

The Earth Institute is an academic research center (housed both on the Morningside campus and at the Lamont-Doherty Earth Observatory in Palisades, NY) that emphasizes a cross-disciplinary approach to solving complex problems associated with the earth, the environment and society.

This means that while students do not apply to the Earth Institute or become students at the Earth Institute, the EI maintains academic relationships with numerous departments on campus, and these departments collaborate with the EI to provide academic programs, activities, lectures and events that seek to incorporate and advance the goals of both the Earth Institute and the respective academic departments and their students. In doing so, we are able to offer programs such as the Special Concentration in Sustainable Development, wherein students can incorporate courses in the earth and biological sciences, engineering sciences, social sciences and health sciences so as to gain a comprehensive understanding of what sustainable development entails, as well as to tailor the program to their own interests.

What are the requirements for the special concentration?

Please see attached

Can I graduate with just a special concentration?

No. A special concentration is not a stand-alone major or concentration; it is intended to serve as a complement to the disciplinary specialization and methodological training inherent in a concentration or major. In addition to the special concentration, students must complete a major or full concentration.

Can juniors and seniors take the special concentration?

It is strongly advised that juniors and seniors consult with their academic advisors before deciding to declare a special concentration. The special concentration requires 9 courses (not credits) and a practicum; many seniors would not have time in their final year to complete this coursework.

Can courses count towards both CC/GS credit and the concentration?

Approved science courses taken for the special concentration may be used to fulfill General Studies and Columbia College requirements. Under certain circumstances, up to three additional courses counted toward the special concentration may also be counted toward the student's major or another concentration. You will need to get the approval of your advisor and the Program Director for any course you would like to count toward another major or concentration. Students may petition to count as related courses those not listed.

Is the special concentration available to Barnard and SEAS students?

The special concentration is currently only available to students from CC and GS. Students from Barnard should contact Professor Stephanie Pfirman and SEAS students should contact Professor Patricia Culligan for more information about declaring the special concentration.

Is there a deadline to declare the special concentration?

Typically, students declare their major or concentration (and any special concentration) at the end of their sophomore year. This is done through the office of the University Registrar. Juniors and seniors who have already declared their major or concentration can also still declare the special concentration by visiting the Registrar's office. Students need to have departmental approval to declare the special concentration, and should have their approval forms signed by the program director, or the program manager, who is located in the Office of Academic and Research Programs (Hogan Hall, lower level).

Is it possible to substitute other Columbia courses for the ones on the list?

If a student believes that a course which does not appear on the list of approved courses should be considered for credit, the student can petition the program director for permission to substitute the course. Students should present a copy of the course syllabus, an idea of the specific course within the special concentration that they would like to replace, and a rationale for how the new course fits the educational goals of the student and the Special Concentration.

Can graduate students declare the Special Concentration in Sustainable Development?

This is specifically an undergraduate program. However, the School of International and Public Affairs does offer a Ph.D. program in Sustainable Development for graduate students who are interested in the field.

What should I do if I am having difficulty cross-registering for courses?

Students who have trouble registering for courses should contact the course instructor and let them know you are part of the special concentration; the instructor will be able to grant access to the course.

Does the program place a greater emphasis on the social or environmental sciences?

The answer is simply: both. To be prepared to participate in the field of Sustainable Development, students need a strong foundation in both of these areas and then must concentrate on the unique interactions between them. The more subtle emphasis among the various fields can then be directed by the student and their advisors to fit their interests and career plans. Ultimately, the program's flexibility in this regard is one of its strengths, allowing you to tailor your education to fit your interests.

Undergraduate Requirements for a Special Concentration in Sustainable Development

Program of study: The Special Concentration in Sustainable Development is not a stand-alone concentration; it is intended to serve as a complement to the disciplinary specialization and methodological training inherent in a concentration or major.

Students wishing to complete a special concentration in sustainable development will work with a program advisor to decide upon course selection and sequencing.

The special concentration will allow students to draw upon classes in a wide range of disciplines including political science, anthropology, environmental science and economics. The courses required for the special concentration are designed to provide Columbia students with an understanding of the theory and practice of sustainable development, provide experience with complex development challenges through direct engagement, and help students imagine and create alternative futures for our rapidly changing world.

The Earth Institute at Columbia University has collaborated with the departments of Earth and Environmental Sciences; Ecology, Evolution, and Environmental Biology; International and Public Affairs; and Earth and Environmental Engineering to offer this program of study, which is now entering its second year.

Please note: If the course code is followed by an “X”, that course is offered in the fall semester. If the course code is followed by a “Y”, that course is offered in the spring semester.

Courses: A total of nine courses plus one practicum are required:

- **5 Courses Focusing on Systems (each course for 3-4.5 points)**
 - **EESC W2330y Science for Sustainable Development**
 - **1 Course in Science Systems**
 - EAEE E1100y, A Better Planet by Design
 - EEEB W1001x, Biodiversity
 - EEEB W2002y, Environmental Biology II
 - EESC V1201y, Environment Risks and Disasters
 - EESC V2100x, y, Earth's Environment Systems: Climate
 - Summer Ecosystem Experiences for Undergraduates
 - **1 Course in Economic Systems**
 - ECON W1105x, y, Principles of Economics
 - ECON W3211x, y, Intermediate Microeconomics
 - **SDEV W3300x or y Challenges of Sustainable Development**
 - **1 Systems Elective (choose either a 2nd science systems course or one of the following):**
 - EESC 1011/1411x, Earth: Origin, Evolution, Processes, Future
 - EESC V1003x, Climate and Society: Case Studies
 - SOCI V2225x, Globalization: Empirical and Theoretical Elements

- ANTH V3004x, Introduction to Environmental Anthropology
- SOCI W3290x, Environmental Sociology
- HIST 3424x, The Politics of the American Environment 1865-Present

● **2 Courses Focusing on Stresses and Solutions (each course for 3 points)**

- ANTH V3660x, y, Gender, Culture and Human Rights
- ANTH V3971, Environment and Cultural Behavior: The Production of Nature
- ANTH V3973x, Environment and Development
- ANTH V3924y, Anthropology and Disaster
- ANTH V3950x, y, Anthropology of Consumption
- CIEN E4163x, Environmental Engineering: Wastewater
- CIEE E4252x, Environmental Engineering
- CIEE E3250y, Hydrosystems Engineering
- CIEE 3255y, Environmental Control and Pollution Reduction Systems
- EAEE E2002x/INAF W4200x, Alternative Energy Resources
- EAEE E3103x, Energy, Minerals, Materials Systems
- EAEE E3901y, Environmental Microbiology
- EAEE E4001x, Industrial Ecology: Earth Resources
- EAEE E4350x, Planning/Management of Urban Hydrologic Systems
- ECIA W4100y, Management & Development of Water Systems
- EAEE E4150y, Air Pollution Prevention and Control
- EAEE E4160y, Solid and Hazardous Waste Management
- ECON BC 3011x, Inequality and Poverty
- ECON BC3029y, Development Economics
- ECON V4080x, Globalization, Incomes and Inequality
- ECON G4301x, Economic Growth and Development
- ECON 4321y, Economic Development
- ECON G4421x, Topics on Problems of Emerging Market Economies Seminar **
- ECON W4480x, Gender and Applied Economics
- ECON W4500x, International Trade
- ECON W4625x, Economics of the Environment
- ECON G4527y, Economic Organization and Development of China
- ECON W2257y, The Global Economy
- ECON W4370y, Political Economy
- EEEB W3087y, Conservation Biology
- EEEB W4700x, Race: The Tangled History of a Biological Concept
- EEEB W4122x, Fundamentals of Ecology and Evolution
- EEEB G4086y, Ethnobotany: The Study of People and Plants
- EEEB G4136, Tropical Agriculture and Sustainable Development
- EEEB G4130x, Restoration and Urban Ecology **
- EESC BC 3200y/EEEB W4200x, Ecotoxicology
- EESC BC3033x, Waste Management
- EESC BC3025y, Hydrology (alternate years)
- EESC BC3032y, Agriculture and Urban Land Use (alternate years)
- EESC BC3040x, Environmental Law (alternate years)
- EESC W4008x, Introduction to Atmospheric Science
- EESC W4400x, Dynamics of Climate Variability and Climate Change
- EESC W4917x, y, The Earth/Human Interactions
- HIST BC3414x, United States in the World
- HIST W3665x, Economic History of Latin America
- HIST W3760y, Main Currents in African History

- HIST W4400y, Americans and the Natural World: 1800-Present
 - HIST W4584x, History of African-American Health and Health Movements
 - HIST W4663y, Gender and Sexualities in early Latin America
 - HIST W3441y, Making of the Modern American Landscape
 - HRTS W3001y, Introduction to Human Rights
 - INAF U4545x, Contemporary Diplomacy*
 - INAF U4710x, Extractive Industry: Rights and Development*
 - INAF U6243y, International Relations of the Environment*
 - INAF U4763y, Policy Analysis of Development*
 - INAF U6060x, International Energy Systems and Business Structures**
 - INAF U6242y Energy Policy**
 - INAF U6760x, Managing Risks: Natural and Other Disasters**
 - PH P6300x, Environment Health Sciences
 - PLAN 4151x, Foundations of Urban Economic Analysis
 - PLAN A4208x, Planning Techniques
 - PLAN 4304x, Introduction to Housing
 - PLAN 4329x, Disaster Planning
 - PLAN 4579x, Environmental Planning
 - PLAN 4501x, Local Economic Development Planning
 - PLAN 4540x, Interdisciplinary Planning for Health
 - PLAN 4609x, Introduction to International Planning
 - PLAN 4620y, Public Financing of Urban Development
 - PLAN 4008y, History and Theory of Planning
 - PLAN A4319x, Introduction to Environmental Planning
 - PLAN 4518, New Patterns of Metropolitan Development
 - PLAN 4392, Politics of Planning
 - POLS G4415, Political Economy and Sociology of Global Capitalism
 - POLS V3615x, Globalization and International Politics
 - POLS BC3414, Colloquium on Women, Gender, and the Third World
 - POLS V3619y, Nationalism and Contemporary World Politics
 - POLS BC3805y, International Organizations **
 - POLS G4626x, Global Justice and Democracy
 - Policy U8778x, Urban Energy Systems and Policy**
 - SCNC W3010 x, y, Science, Technology and Society
 - SOCI V2230y, Food and the Social Order
 - SOCI W3235x, y, Social Movements
 - SOCI W3945x, Seminar: Inequality and Public Policy
 - SOCI W3960y, Law, Science and Society
 - URBS V3310x, Science and Technology in the Urban Environment
 - URBS V3550x, Community Building and Economic Development**
 - URBS V3565x, Cities in Developing Countries: Problems and Prospects
 - Approved upper level courses focusing on issues such as Poverty, Health, Population, Transportation, Resources
- **1 Skills Course (3 point course)**
 - EAEE E4009x, y, GIS for Resource, Environmental, and Infrastructure Management
 - EAEE E4257y, Environmental Data Analysis & Modeling
 - EESC BC3017x, Environmental Data Analysis
 - SOCI V3020x, y, Statistics for Social Research
 - SOCI V3210x, y, Methods for Social Research
 - URBS V3200x, y, GIS Methods and Case Studies

- Summer Ecosystem Experiences for Undergraduates
- **Practicum (1 required, 1 point course), or Practice (please see Internship Substitution Application Form)**
 - INAF U4734x, SIPA-EI Practicum in Environmental Science and Policy
 - INAF U4738y, Earth Institute Practicum
 - INAF U4420y, Oil, Rights and Development
 - INAF U4728y, Practicum in International Energy Management and Policy**
 - SDEV W3500x, EI-Lamont Sustainable Development Practicum (not offered fall 2009)
 - Summer Ecosystem Experiences for Undergraduates (if applicable)
- **1 Required Synthesis Course: Sustainable Development Workshop SDEV 3500y (4 points; this course should be taken in the 3rd or 4th year of study)**

NOTE: Approved science classes taken for the special concentration may be used to fulfill General Studies and Columbia College requirements. Under certain circumstances, up to three additional courses counted toward the special concentration may also be counted toward the student's major or another concentration. You will need to get the approval of your advisor and the Program Director for any course you would like to count toward another major or concentration. Students may petition to count as related courses those not listed.

*Seniors only

** Students must petition for entry to course

Course Planning Form Special Concentration in Sustainable Development

Name: _____ UNI: _____

Major: _____ Expected Grad Date: _____

a) 5 Courses Focusing on Systems (each course for 3-4.5 points)

Requirement	Course Taken/Credits	Semester Completed	Grade
1) Science for Sustainable Development, EESC W2330			
2) 1 Course in Science Systems <i>Please list the course number</i>			
3) 1 Course in Economic Systems <i>Please list the course number</i>			
4) Challenges of Sustainable Development, SDEV W3300x			
5) 1 Systems Elective <i>Please list the course number</i>			

b) 2 Courses Focusing on Stresses and Solutions (each course for 3 points)

1) Stresses and Solutions <i>Please list the course number</i>			
2) Stresses and Solutions <i>Please list the course number</i>			

c) 1 Skills Course (for 3 points)

1) Skills <i>Please list the course number</i>			
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d) 1 Practicum (1 point) or Practice (requires approval – see Internship Substitution Application Form)

1) Practicum or Approved Practice <i>Please list the course number</i>			
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e) Seminar in Sustainable Development (4 points, taken during 3rd or 4th year of study)

Sustainable Development Workshop, SDEV 3500y			
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Internship Substitution Application Form Special Concentration in Sustainable Development

Name: _____ UNI: _____

Major: _____ Expected Grad Date: _____

Please provide detailed, specific responses. Your application should be no more than 3 pages long. You may email your application to Kevin Griffin at griff@ldeo.columbia.edu.

The internship substitution applies to the “Practicum” section of the Special Concentration requirements:

- **Practicum (1 required, 1 point course), or Practice (requires approval)**
 - INAF U4734x, SIPA-EI Practicum in Environmental Science and Policy
 - INAF U4738y, Earth Institute Practicum
 - INAF U4420y, Oil, Rights and Development
 - INAF U4728y, Practicum in International Energy Management and Policy**
 - SDEV W3500x, EI-Lamont Sustainable Development Practicum (not offered fall 2009)
 - Summer Ecosystem Experiences for Undergraduates (if applicable)

1. Please list the contact information of the company/organization and your direct supervisor’s name, title, company address, email and phone number. If you had multiple supervisors, please list all supervisors’ full information.
2. How many hours did you work, and for how many weeks?
3. What were your responsibilities? (please be detailed)
4. To which specific sustainable development issues was your internship related? How was the internship related to those issues?
5. What are the three most important and relevant things that you learned in your internship, as applied to the issues of sustainable development that you described above?

Course Approval Application Form
Special Concentration in Sustainable Development

Name: _____ UNI: _____

Major: _____ Expected Grad Date: _____

Please provide detailed, specific responses. Your application should be no more than 2 pages long (including the syllabus). You may email your application to Kevin Griffin at griff@ideo.columbia.edu.

- 1) Is the course a Columbia course?
- 2) If yes, which Department offers the course?
- 3) If no, please list the name and address of the school at which you completed/plan to complete the course. Also please provide a brief explanation of your course of study at that institution (study abroad, course of study undertaken before transferring to Columbia, etc.)
- 4) Please list the course name, course code, professor (and TA, if applicable), year/semester offered, and number of credits.
- 5) Please attach a full syllabus for the course.
- 6) Please describe the sections of the course that address specific sustainable development issues and how those issues fit into the overall content of the course. This may include readings, lectures or assignments.
- 7) For any individual paper(s) or assignment(s), are you able to focus on a specific sustainable development issue? If so, please describe the sustainable development issue you plan to research for the assignment.