

**Earth Institute Practicum**  
**SUMA K4734.001**  
**Science-Based Solutions for Sustainability**

**Time:** Tuesdays, 6:00 – 8:00pm

**Location:** 413 Kent Hall

**Instructor Information**

Arthur Lerner-Lam

[lerner@ldeo.columbia.edu](mailto:lerner@ldeo.columbia.edu)

(845) 365-8348

Office Hours: Before class or by appointment

**Instructional Assistants**

Alix Schroder

[aschroder@ei.columbia.edu](mailto:aschroder@ei.columbia.edu)

(212) 854-1214

Office Hours: TBD

Kelsie DeFrancia

[kdefrancia@ei.columbia.edu](mailto:kdefrancia@ei.columbia.edu)

(212) 854-8498

Office Hours: TBD

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**Course Description**

The Earth Institute Practicum is designed to be a broad survey of the applications of frontier research to the practice of sustainable development, environmental policy, and sustainability science. **The course is open to both graduate and undergraduate students. Undergraduate students with the Special Concentration in Sustainable Development are required to take a practicum and this course fulfills that requirement.**

The Practicum is a dynamic forum featuring a series of lectures and discussions by directors or senior researchers/professors representing different Earth Institute departments, centers and laboratories. These lectures will emphasize key concepts in applied earth and environmental sciences and the social sciences relevant to sustainability practice, including introductions to data sources, analytical methods, complex system modeling and decision tools. Along with case studies and background reading, the lectures will illustrate how frontier scholarship can be used to provide the rational basis for the actions by governments, the private sector, international organizations and advocacy groups needed to address the challenging relationships between natural and human systems.

The Practicum will explore five or six themes related to sustainability challenges, with two consecutive class sessions devoted to each. The first session will comprise a guest lecture followed by class discussions. The second session will comprise a structured in-class debate on a topic explored in the lecture and conducted by assigned debating teams. The debates will allow students to engage in evidence-based verbal arguments against opposing viewpoints in a mock setting. The structure and terms of the debates will be discussed during the first class session.

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## **Course Calendar**

### **Sept. 5: Introduction to the Practicum Course**

**Art Lerner-Lam**, Lamont Research Professor; Adjunct Professor of Earth and Environmental Sciences; Deputy Director, Lamont-Doherty Earth Observatory

### **Sept. 12: Climate Modeling (Lecture)**

Speaker: Yutian Wu, Lamont Assistant Research Professor, Ocean and Climate Physics

### **Sept. 19: Climate Modeling (Debate)**

Debate: Groups 1 and 2

### **Sept. 26: Climate Impacts (Lecture)**

Speaker: Park Williams, Lamont Assistant Research Professor, Biology and Paleo-Environment

### **Oct. 3: Climate Impacts (Debate)**

Debate: Groups 3 and 4

### **Oct. 10: Extreme Weather (Lecture)**

Speaker: Suzana Camargo, Lamont Research Professor, Division of Ocean and Climate Physics

### **Oct. 17: Extreme Weather (Debate)**

Debate: Groups 5 and 6

### **Oct. 24: Climate & Agriculture (Lecture)**

Speaker: Walter Baethgen, Senior Research Scientist, Head of Regional and Sectoral Research, International Research Institute for Climate and Society (IRI)

*Due: Abstract for final paper*

### **Oct. 31: Climate & Agriculture (Debate)**

Debate: Groups 7 and 8

### **Nov. 7: No Class – Election Day**

### **Nov. 14: Energy (Lecture)**

Speaker: Dave Goldberg, Lamont Research Professor, Associate Director for Large Programs/Marine Division

### **Nov. 21: Energy (Debate)**

Debate: Groups 9 and 10

### **Nov. 28: Topic TBD**

### **Dec. 5: In-Class Wrap-Up & Party**

### **Dec. 12: No Class; Final Paper Due**

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#### **Method of Evaluation**

**There are two methods of evaluation for this course. Students may elect to take the course for 1 credit or for 3 credits.**

#### **1 Credit:**

- Attendance: 10%
- Group debate: 40%
- Abstract for final (1 page): 10%
- Final research paper (5-8 pages): 40%

#### **3 Credits:**

- Attendance: 10%
  - Group debate: 40%
  - Abstract for final (1 page): 10%
  - Final research paper (10-15 pages): 40%
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#### **About The Earth Institute**

Columbia University's Earth Institute is the world's leading academic center for the integrated study of Earth, its environment, and society. The Institute's overarching goal is to help achieve sustainable development primarily by exploring and expanding the knowledge surrounding environmental issues. Through education, scientific research and practical application, the Earth Institute tackles real-world challenges. With 850 scientists, postdoctoral fellows and students working in and across more than 20 Columbia University research centers, the Earth Institute is helping to advance understanding of nine interconnected global issues: climate and society, water, energy, poverty, ecosystems, public health, food and nutrition, hazards and urbanization.

The Earth Institute builds upon excellence in the core disciplines – earth sciences, biological sciences, engineering sciences, social sciences, and health sciences – and stresses cross-disciplinary approaches to complex problems. Through its research, training, and global partnerships, it mobilizes science and technology to advance sustainable development, while placing special emphasis on the needs of the world's poor.