

# SUSTAINABLE DEVELOPMENT

## The Sustainable Development Program:

Department website: <http://sdev.ei.columbia.edu>

Office location: The Earth Institute, 2910 Broadway, Hogan Hall, B-Level, New York, NY 10025

### Co-Directors of Undergraduate Studies:

Leah Aronowsky, 212-854-3830; [la2438@columbia.edu](mailto:la2438@columbia.edu)

Joerg Schaefer, 845-365-8703, [schaefer@ldeo.columbia.edu](mailto:schaefer@ldeo.columbia.edu)

**Undergraduate Administrator:** Sylvia Montijo;  
[smontijo@climate.columbia.edu](mailto:smontijo@climate.columbia.edu)

## The Study of Sustainable Development

Sustainable development is founded on the premise that human well-being should advance without irreparable harm to ecosystems and the vital services they provide, without depleting essential resources, and without posing risks to future generations. The term "sustainable" refers to managing the world's economy in a manner consistent with the continued healthy functioning of Earth's ecosystems, oceans, atmosphere and climate. In this context, "development" refers to continued social, political, and economic progress aimed at improving the well-being of the global community, especially for the poorest people.

### Academic Programs

The Earth Institute—in collaboration with Columbia College, the School of General Studies, the School of International and Public Affairs, and the Departments of Earth and Environmental Science; Ecology, Evolution, and Environmental Biology; and Earth and Environmental Engineering—offers a major and a special concentration in sustainable development.

These programs are designed to: engage students in this emergent interdisciplinary discussion, provide knowledge of the theory and practice of sustainable development, stimulate a critical examination of historical and conceptual antecedents, provide experience in the complex challenges of sustainable development through direct engagement, and help them imagine alternative futures for our rapidly changing world. With help from the Earth Institute faculty, courses are specifically created to address the very real and complex issues of development as they relate to the interactions of the natural and social systems.

The major focuses heavily on the sciences and provides students with a working knowledge of issues on a range of interacting subject areas. After declaring the major, students are assigned an academic adviser from within the Earth Institute, who advises on class selection and career development. Students benefit from a support system of faculty, advisers, and program managers, and have access to a multitude of resources for internships, study abroad programs, and career development.

The special concentration is intentionally more flexible, but its structure allows students to benefit from the cross-disciplinary courses and to build the expertise to allow them to address the fundamental issue of how to move towards a trajectory of sustainability.

The sustainable development program is structured to ensure that students graduate with the skills and knowledge to enable them to advance professionally in the public, private, governmental, and nonprofit sectors, and to pursue advanced degrees. Those interested in sustainable

development are encouraged to participate in lectures, conferences, and other programs sponsored by the Earth Institute.

## Student Advising

Co-Directors of Undergraduate Studies:

- Leah Aronowsky, 212-854-3830; [la2438@columbia.edu](mailto:la2438@columbia.edu)
- Joerg Schaefer, 845-365-8703, [schaefer@ldeo.columbia.edu](mailto:schaefer@ldeo.columbia.edu)

Undergraduate Administrator:

- Sylvia Montijo; [smontijo@climate.columbia.edu](mailto:smontijo@climate.columbia.edu)

## Consulting Advisers

Prospective students can declare the major or special concentration using the online declaration system. Please direct any program questions to Sylvia Montijo ([smontijo@climate.columbia.edu](mailto:smontijo@climate.columbia.edu)), who is located in the Earth Institute's offices in [Hogan Hall](#).

Columbia College

Columbia College students typically declare their major or concentration (and any special concentration) through the Center for Student Advising during the spring semester of their sophomore year. More information is available on the Center for Student Advising [website](#).

School of General Studies

General Studies students may declare a major or concentration during the months of March and October. Additional details are available on the General Studies [website](#).

Program staff are available to discuss requirements, course substitutions and registration. Please direct these questions to Sylvia Montijo; [sm4084@columbia.edu](mailto:sm4084@columbia.edu)

## Enrolling in Classes

The sustainable development foundation courses should be taken first and students should then work with the program adviser on further course selection and sequencing. The major in sustainable development requires a minimum of 15 courses and a practicum as [follows](#).

Students should take the following foundational courses in their first year at Columbia:

- EESC UN2330 Science for Sustainable Development (offered in fall)—this course satisfies the science core requirement
- SDEV UN2300 Challenges of Sustainable Development (offered in spring)

Course Substitution:

If you would like to have a course count for credit that was taken outside of the listed program requirements, the course must first go through a review and approval process. This includes electives not listed on the pre-approved list, transfer credits, study abroad, and Columbia courses not explicitly listed on the requirements list. To request approval, you must submit a course substitution form, linked below, to Sylvia Montijo at [sm4084@columbia.edu](mailto:sm4084@columbia.edu).

Restrictions:

- Requests for course substitutions will not be accepted beyond the first semester of your senior year. You may need to return for an additional semester to complete the program requirements.
- Substitutions for the foundational courses (EESC 2330 Science for Sustainable Development and SDEV UN2300 Challenges of Sustainable Development) are not allowed.

Reviews are completed on a monthly basis and your decision will be e-mailed to you. A maximum of 4 course substitutions are permitted for majors and 2 course substitutions for special concentrators. The limit excludes the approval of elective courses.

#### Practicum Substitution:

Students in both the sustainable development major and special concentration are required to complete a Practicum. If a student wishes to substitute the Practicum requirement with a related internship or independent study, he/she will need to submit this form for pre-approval by the program directors. If your internship/independent study is pre-approved, you will need to enroll in the SDEV UN3998 Independent Study course during the same semester you undertake the approved internship/project OR the semester immediately following the completion of the internship/study. If you complete 42.5 contact hours, you are eligible to register for 1 credit. If you complete 85 contact hours or more, you are eligible to register for 2 credits. At the end of the semester you are enrolled in SDEV 3998, you will be asked to submit a Practicum Substitution Application to Sylvia Montijo at [sm4084@columbia.edu](mailto:sm4084@columbia.edu). If you have successfully completed the application and received a passing grade, your internship/project will fulfill the practicum requirement. Please note only unpaid internships/independent studies are eligible for practicum credit.

## Preparing for Graduate Study

Accelerated 5 Year Program: Sustainable Development (B.A.) and Sustainability Management (M.S.)

Launched in Fall 2015 this companion degree program — offered in collaboration with The Earth Institute, Columbia College, the School of General Studies and the School of Professional Studies — allows students to earn both a bachelor's and a master's degree in just five years. Students are trained to become sustainability practitioners who understand the complex environmental challenges facing the world. They develop practical skills in management, quantitative analysis, and sustainability to transform the way that organizations do business.

Building upon the strong foundation of their undergraduate coursework, Sustainable Development students who are accepted into the [Sustainability Management](#) program will learn to draw from interdisciplinary perspectives in general, as well as develop specific skills and knowledge in financial management, quantitative analysis, public policy, and the physical dimensions of sustainability. Students will receive practical professional training to help them to understand the systematic and organizational role of sustainability in any organization.

## Coursework Taken Outside of Columbia

Coursework in fulfillment of a major or minor [or special program or concentration] must be taken at Columbia University unless explicitly noted here and/or expressly permitted by the Director of Undergraduate Studies of the program. Exceptions or substitutions permitted by the

Director of Undergraduate Studies should be confirmed in writing by email to the student.

## Advanced Placement

To ensure their advanced placement credits are transferred to Columbia, students are encouraged to work closely with their advising dean. For consideration of major credit, students must submit a course petition form, available [here](#), for review by the program's Co-Directors.

## Barnard College Courses

Several Barnard College courses have been approved for program requirements in the major, special concentration, and minor. See program requirements page for more details. Students must submit a course substitution form, available [here](#), to have additional Barnard coursework reviewed for program credit.

## Transfer Courses

When students transfer to Columbia from other institutions, their coursework at their previous institution must first be considered by their school in order to be evaluated for degree credit (e.g., to confirm that the courses will count toward the 124 points of credit that every student is required to complete for the B.A. degree). Only after that degree credit is confirmed, departments may consider whether those courses can also be used to fulfill specific degree requirements toward a major or minor or special program or concentration.

- A maximum of 4 course substitutions are permitted for majors and 2 course substitutions for special concentrators. The limit excludes the approval of elective courses. No course substitutions are permitted for minors.
- Students must submit a course petition form, available [here](#), for review by the program's Co-Directors for any transfer coursework.

## Study Abroad Courses

Classes taken abroad through Columbia-led programs (i.e., those administered by Columbia's Center for Undergraduate Global Engagement and taught by Columbia instructors) are treated as Columbia courses, equivalent to those taken on the Morningside Heights campus. If they are not explicitly listed by the department as fulfilling requirements in the major or minor [or special program or concentration], the DUS will need to confirm that they can be used toward requirements in the major/minor.

Classes taken abroad through other institutions and programs are treated as transfer credit to Columbia, and are subject to the same policies as other transfer courses. There will be a limit on the number of courses taken abroad that can be applied to the major/minor, and they must be approved by the DUS.

[Study abroad](#) and internships are strongly encouraged as a basis for thesis research and to provide students with practical experience and enhanced global awareness. The Global Fellows in Sustainable Development Program provides funding for students to further their studies off campus in the form of fieldwork and research.

## Summer Courses

Summer courses at Columbia are offered through the School of Professional Studies. Courses taken in a Summer Term may be used toward requirements for the major/minor only as articulated in department/institute/center guidelines or by permission of the Director(s) of Undergraduate Studies. More general policies about

Summer coursework can be found in the Academic Regulations section of this Bulletin.

## Undergraduate Research and Senior Thesis

The Senior Research Seminar, offered jointly with [Barnard College](#), can be taken in the Spring/Fall or Fall/Spring sequence and includes guided, independent, in-depth research as well as discussions about scientific presentations and posters, data analysis, library research methods, and scientific writing culminating in the senior thesis. Each student is responsible for oral research presentations and an extended written report on a related subject of his or her choice. Completing a senior thesis with a B+ or better in both seminar courses is required for departmental honors. As of spring 2024, over 70+ students have completed a thesis with the sustainable development program. A list of past SDEV senior theses are [here](#).

### Undergraduate Research in Courses

SDEV 4101 Qualitative Research Methods

This course will provide an overview of social science research methods, with a focus on building a toolkit for undergraduate students. We begin with an overview of the science of knowing. How do we generate scientific hypotheses in the social sciences, and then how can we find out whether those hypotheses are accurate? An exploration of a range of qualitative research methods will occupy the majority of our class time, including interviewing, case studies, questionnaires, surveys, coding, and participant observation. Toward the end of the course we consider how mixed methods allow for the integration of quantitative tools in the social sciences. Throughout, students will both study and practice these research methods, experimenting to better understand the strengths and challenges associated with each approach. The course will end with poster presentations in which students share their own research and justify the methods they have employed.

### Senior Thesis Coursework and Requirements

The Senior Research Seminar, offered jointly with [Barnard College](#), can be taken in the Spring/Fall or Fall/Spring sequence and includes guided, independent, in-depth research as well as discussions about scientific presentations and posters, data analysis, library research methods, and scientific writing culminating in the senior thesis. Each student is responsible for oral research presentations and an extended written report on a related subject of his or her choice. Completing a senior thesis with a B+ or better in both seminar courses is required for departmental honors. As of spring 2024, over 70+ students have completed a thesis with the sustainable development program.

### Undergraduate Research Outside of Courses

The Climate School offers undergraduate students research assistant opportunities. Undergraduates from Columbia University serve as research assistants on projects related to climate and sustainable development and the environment with distinguished faculty and researchers at the cutting edge of this burgeoning field.

While research assistant positions at Columbia University are generally awarded to graduate students, this program instead aims to present undergraduates with a unique opportunity to be involved in research at a high level and to gain valuable experience and skills for their future academic and professional careers.

More information on student opportunities through the Climate School can be found [here](#).

## Department Honors and Prizes

### • Department Honors

Sustainable Development majors who wish to be considered for departmental honors must:

1. Have a grade point average of at least 3.7 in their major courses.
2. Take two courses of the [senior thesis seminar](#).
3. Receive at least a B+ in both senior thesis courses.

### • Academic Prizes

Stuart Gaffin Award for Leadership and Engagement

The Stuart Gaffin Award for Leadership and Engagement honors an individual or group of students in their senior year who will graduate with either a major or special concentration degree from the Undergraduate Program in Sustainable Development. The award commemorates Professor Stuart Gaffin, who taught the Workshop in Sustainable Development from 2009-2019. Award selections will be based on nominating and supporting letters from students, faculty, and staff. Awardees will be selected based on demonstrated leadership and service in the spirit of sustainable development either on or off campus. The award honors leadership, impact, engagement, and dedication, all of which were characteristic of Professor Gaffin's contributions to our Columbia community.

Phi Beta Kappa

Each year 10% of graduating seniors are nominated for this honor (2% in fall and 8% in spring). Students are chosen based on the breadth, depth and rigor of their academic achievements, as well as recommendations from faculty members on their intellectual promise, character, and achievement both in and out of the classroom.

## Other Important Information

### • [Collaborative Research Grant](#)

The [Collaborative Research Grant](#), launched in 2017, provides undergraduate and masters students with an opportunity to work alongside Columbia University faculty on a research project of the student's choosing. Students may apply for funding for up to two semesters (fall/spring or spring/fall), which will enable them to explore the research project more fully than a typical one semester project would allow. Applications will be accepted from students from a variety of backgrounds and departments as long as the research focuses on an area related to environmental sustainability.

### • Denning Global Fellows in Sustainable Development

The Denning Global Fellows in Sustainable Development Program supports field research for current Columbia undergraduates studying sustainable development, either as a major or as a special concentration. This field research may take the form of actual fieldwork, unpaid research assistantships, study abroad opportunities\*, theses, senior seminar projects, or independent studies. Funding will only be awarded for activities that explicitly fulfill degree requirements, and/or further an individual's studies in sustainable development. Ideally, fieldwork should provide an opportunity to conduct research and hone practical skills in

data collection, analysis, and project management. Awards will vary in amount according to individual project needs. Current full-time Columbia students in the Undergraduate Program in Sustainable Development are eligible, provided they are in good academic standing. Learn more about previous Global Fellows [here](#).

## Sustainable Development Faculty

Susana Adamo (Center for International Earth Information Network)

Satyajit Bose (School of International and Public Affairs)

Steve Cohen (The Earth Institute; School of International and Public Affairs)

Lisa Dale (The Earth Institute; Ecology, Evolution, and Environmental Biology)

Ruth DeFries (Ecology, Evolution, and Environmental Biology) (Co-Director)

Paul Gallay (Ecology, Evolution and Environmental Biology)

Francesco Fiondella (International Research Institute for Climate and Society)

Michael Gerrard (Center for Climate Change Law and Columbia Law School)

Adela Gondek (Ecology, Evolution and Environmental Biology)

Radley Horton (Center for Climate Systems Research)

Joyce Klein-Rosenthal (The Earth Institute)

Jacqueline Klopp (The Earth Institute)

Upmanu Lall (Columbia Water Center; International Research Institute for Climate and Society)

Kytt McManus (Center for International Earth Science Information Network)

Rachel Moresky (Population and Family Health)

John Mutter (Earth and Environmental Sciences; School of International and Public Affairs)

Linda Pistolesi (Center for International Earth Science Information Network)

Jason Smerdon (Lamont-Doherty Earth Observatory) (Co-Director)

Martin Stute (Lamont-Doherty Earth Observatory)

Phil Weinberg (Ecology, Evolution and Environmental Biology)

## Guidance for Undergraduate Students in the Department

### Program Planning for all Students

Students who entered Columbia (as first-year students or as transfer students) in or after Fall 2024 may select from a curriculum of majors

and minors. The requirements for the Bachelor of Arts degree, and role of majors and minors in those requirements, can be found in the Academic Requirements section of the Bulletin dated the academic year when the student matriculated at Columbia and the Bulletin dated the academic year when the student was a sophomore and declared programs of study.

Students who entered Columbia in or before the 2023-2024 academic year may select from a curriculum of majors and minors and concentrations. The requirements for the Bachelor of Arts degree, and the role of majors and minors in those requirements, can be found in the Academic Requirements section of the Bulletin dated the academic year when the student matriculated at Columbia and the Bulletin dated the academic year when the student was a sophomore and declared programs of study.

A minimum of 15 courses and a practicum are required, for a total of approximately 47 points, to complete the major. Students will take courses within the following framework:

- I. SDEV Foundation
- II. Basic Disciplinary Foundation (Natural Science, Social Science, Quantitative Foundation)
- III. Analysis and Solutions to Complex Problems
- IV. Skills/Actions
- V. Elective
- VI. Practicum
- VII. Workshop

For a full list of previously approved electives, please visit the sustainable development program [website](#).

Note:

Please visit the Sustainable Development website for requirements [majors](#).

### Course Numbering Structure

- 1000-2000-level courses are intended to be introductory (such as the Social Science sequence or the Foundation coursework).
- 3000-4000-level courses cover more advanced sustainable development concepts, such as the Skills/Actions, Complex Problems, or Elective requirements. Approved courses in the MS in Sustainability Management are also offered at the 4000-level.
- 5000-level courses are additional master's level courses (i.e., Climate and Society courses).
- 6000-level and above are PhD courses.

### Guidance for First-Year Students

Students must first be accepted into Columbia College or the School of General Studies to be eligible to declare the Sustainable Development program. Prospective students should review the course requirements and schedule an appointment with the program administrators to discuss any questions regarding the requirements. Prospective students can declare the major or special concentration using the online declaration system.

### Guidance for Transfer Students

Transfer students are advised to submit [course petitions](#) to have their prior coursework reviewed for major credit. Course petitions will not

be accepted for foundation coursework (SDEV 2300 Challenges of Sustainable Development and EESC 2330 Science for Sustainable Development).

## Undergraduate Programs of Study

### Required Coursework for all Programs

#### Major:

A minimum of 15 courses and a practicum are required, for a total of approximately 47 points, to complete the major. Students will take courses within the following framework:

- I. SDEV Foundation
- II. Basic Disciplinary Foundation (Natural Science, Social Science, Quantitative Foundation)
- III. Analysis and Solutions to Complex Problems
- IV. Skills/Actions
- V. Elective
- VI. Practicum
- VII. Workshop

A letter grade of C- or better is needed in all program related courses in order to satisfy the requirements for the major. P/F grades are only permitted in SDEV 3998.

For course descriptions and scheduling, check out the sustainable development [Bulletin](#).

#### Special concentration:

The special concentration is intentionally more flexible than the major, given that students have their major classes as well. However, its structure allows students to benefit from the program's cross-disciplinary courses and to build the expertise that will allow them to address the fundamental issue of how to move toward a trajectory of sustainability.

A minimum of nine courses and a practicum are required for the special concentration. Students will take courses within the following framework:

- I. SDEV Foundation
- II. Natural Science Systems
- III. Social Science Systems
- IV. Analysis and Solutions to Complex Problems
- V. Skills/Actions
- VI. Practicum
- VII. Workshop

A letter grade of C- or better is needed in all program related courses in order to satisfy the requirements for the special concentration. P/F grades are only permitted in SDEV 3998.

For course descriptions and scheduling, check out the sustainable development [Bulletin](#).

### Major in Sustainable Development

A minimum of 15 courses and a practicum are required, for a total of approximately 47 points, to complete the major. Students will take courses within the following framework:

#### Sustainable Development Foundation

|             |  |
|-------------|--|
| SDEV UN1900 | INTRO TO SUSTAINABLE DEVPT SEM (Beginning fall 2023, SDEV 1900 Introduction to Sustainable Development is no longer a required course for students in the major and special concentration. See note below.) <sup>1</sup> |
| SDEV UN2300 | CHALLENGES OF SUSTAINABLE DEV  |
| EESC UN2330 | SCIENCE FOR SUSTAINABLE DEVPT  |

#### Basic Disciplinary Foundation

Select one of the following science sequences. NOTE: Associated labs are required for Physics and Environmental Biology sequence.

|                           |   |
|---------------------------|---|
| CHEM UN1403 & CHEM UN1404 | GENERAL CHEMISTRY I-LECTURES and GENERAL CHEMISTRY II-LECTURES  |
| EEEB UN2001 & EEEB UN2002 | ENVIRONMENTAL BIOLOGY I and ENVIRONMENTAL BIOLOGY II (EESC UN2310 is a co-requisite with EEEB UN2002)           |
| EESC UN1600 & EESC UN2100 | EARTH RESOURCES # SUSTAIN DEV and EARTH'S ENVIRO SYST: CLIM SYST  |
| EESC UN1600 & EESC UN2200 | EARTH RESOURCES # SUSTAIN DEV and EARTH'S ENVIRONMENTAL SYSTEMS: THE SOLID EARTH                                |
| EESC UN1600 & EESC UN2300 | EARTH RESOURCES # SUSTAIN DEV and EARTH'S ENVIRO SYST: LIFE SYST (EESC UN2310 is co-requisite with EESC UN2300) |

|                           |  |
|---------------------------|--|
| EESC UN2100 & EESC UN2200 | EARTH'S ENVIRO SYST: CLIM SYST and EARTH'S ENVIRONMENTAL SYSTEMS: THE SOLID EARTH  |
| EESC UN2100 & EESC UN2300 | EARTH'S ENVIRO SYST: CLIM SYST and EARTH'S ENVIRO SYST: LIFE SYST (EESC UN2310 is co-requisite with EESC UN2300)                 |
| EESC UN2200 & EESC UN2300 | EARTH'S ENVIRONMENTAL SYSTEMS: THE SOLID EARTH and EARTH'S ENVIRO SYST: LIFE SYST (EESC UN2310 is co-requisite with EESC UN2300) |

|                           |   |
|---------------------------|---|
| PHYS UN1201 & PHYS UN1202 | GENERAL PHYSICS I and GENERAL PHYSICS II (LABS PHYS 1291 and PHYS 1292 also required) |
|---------------------------|---|

Select two of the following social science courses:

|             |  |
|-------------|--|
| ANTH UN1002 | THE INTERPRETATION OF CULTURE          |
| ANTH UN1003 | The Environment                        |
| ANTH UN2004 | INTRO TO SOC # CULTURAL THEORY         |
| ANTH BC2427 | ANTHROPOLOGY OF CLIMATE CHANGE         |
| ECON UN1105 | PRINCIPLES OF ECONOMICS                |
| HIST UN2222 | NATURE # POWER: ENV HIST NORTH AMERICA |

|             |   |
|-------------|---|
| POLS UN1201 | INTRO TO AMERICAN POLITICS (Students can take POLS 1201 or SDEV 2050) |
|-------------|---|

|             |  |
|-------------|--|
| POLS UN1501 | INTRO TO COMPARATIVE POLITICS (Students can take POLS 1501 OR POLS 1601) |
|-------------|--|

|             |                                     |
|-------------|-------------------------------------|
| POLS UN1601 | INTERNATIONAL POLITICS              |
| SDEV UN2000 | INTRO TO ENVIRONMENTAL LAW          |
| SDEV UN2050 | ENVIRONMENTAL POLICY AND GOVERNANCE |
| SDEV UN3400 | HUMAN POPULATIONS # SDEV            |
| SOCI UN1000 | THE SOCIAL WORLD                    |

Select one of the following quantitative foundations courses:

|             |  |
|-------------|--|
| EEEB UN3005 | INTRO-STAT-ECOLOGY # EVOL BIOL   |
| EESC BC3017 | ENVIRONMENTAL DATA ANALYSIS  |
| STAT S1101  | INTRODUCTION TO STATISTICS (this course is approved as a quantitative foundations course starting Spring 2024)   |
| STAT UN1101 | INTRODUCTION TO STATISTICS (this course is approved as a quantitative foundations course starting Spring 2024)   |
| STAT UN1201 | CALC-BASED INTRO TO STATISTICS   |
| MATH UN2015 | Linear Algebra and Probability (This course is approved as a quantitative foundations course starting Fall 2022. This course replaces MATH UN2010 Linear Algebra as an option for this requirement.) |

#### Analysis and Solutions to Complex Problems

Select two of the following courses:

|             |  |
|-------------|--|
| ANTH BC3932 | CLIM CHNG/GLOBAL MIGR/HUM RGT  |
| CIEE E3260  | ENGINEERING FOR COMMUNITY DEVELOPMENT  |
| EAAE W4304  | Closing the carbon cycle   |
| ECIA W4100  | MGMT # DEVPT OF WATER SYSTEMS  |
| EEEB G4135  | Urban Ecology and Design   |
| EESC BC3032 | Agricultural and Urban Land Use: Human-Environment Interactions  |
| EESC GU4600 | EARTH RESOURCES # SUSTAIN DEV  |
| HIST UN3712 | African Climate and History  |
| HIST GU4811 | Encounters with Nature: The History and Politics of Environment, Health and Development in South Asia and Beyond |
| PUBH UN3100 | FUNDAMENTALS OF GLOBAL HEALTH  |
| PUBH GU4200 | Environment, Health, and Justice: Concepts and Practice  |
| SDEV UN3330 | Ecological and Social Systems for Sustainable Development  |
| SDEV UN3355 | CLIMATE CHANGE AND LAW   |
| SDEV UN3360 | DISASTERS AND DEVELOPMENT  |
| SDEV UN3366 | ENERGY LAW   |
| SDEV UN3410 | Cities # Sustainability  |
| URBS UN3565 | Cities in Developing Countries: Problems and Prospects   |
| SDEV GU4250 | CLIMATE CHANGE: RESILIENCE # ADAPTATION  |

The Summer Ecosystems Experience for Undergraduates (SEE-U) \*

|             |   |
|-------------|---|
| SDEV GU4650 | Building Climate Justice: Co-Creative Coastal Resilience Planning |
|-------------|---|

#### Skills/Actions

Select two of the following courses:

|             |                                |
|-------------|--------------------------------|
| EAAE E4257  | ENVIR DATA ANALYSIS # MODELING |
| EESC GU4050 | GLOBAL ASSMT-REMOTE SENSING    |
| EESC BC3050 | BIG DATA WITH PYTHON           |
| SDEV UN2320 | ECON # FIN MTHDS FOR SDEV      |
| SDEV UN3390 | GIS FOR SUSTAINABLE DEVELOPMNT |
| SDEV UN3450 | SPATIAL ANALYSIS FOR SDEV      |
| SOCI UN3010 | METHODS FOR SOCIAL RESEARCH    |
| SUMA PS4100 | Sustainability Management      |
| SDEV GU4101 | QUAL RESEARCH METHODS SDEV     |
| SDEV GU4240 | Science Communication          |

The Summer Ecosystems Experience for Undergraduates (SEE-U) \*

#### Practicum

Select one of the following courses:

|             |  |
|-------------|--|
| SDEV GU4500 | SUSTAINABILITY AND THE MEANING OF PLACE ON CUTTYHUNK ISLAND                                      |
| SDEV GU4550 | The New York City Watershed: From Community Displacement to Collaboration and Climate Adaptation |
| INAF U4420  | Oil, Rights and Development  |
| SDEV UN3998 | SUPERVISED INDIVIDUAL RESEARCH   |
| SUMA PS4310 | Practicum in Innovation Sustainability Leadership  |
| SUMA PS4734 | Earth Institute Practicum  |

#### Electives

Select two courses from the following areas. Courses can be combined across Areas 2-5 only. If you select Area 1, you must complete two thesis courses and these will fulfill the elective requirement:

Area 1: Senior Thesis Sequence (EESC BC3800/EESC BC3801 and EESC UN3901) \*\*

Area 2: Upper level courses from the approved electives list (see link in footnotes to access list) \*\*\*

Area 3: Additional courses listed under Analysis and Solutions to Complex Problem

Area 4: Additional courses listed under Skills/Actions

Area 5

|             |                                   |
|-------------|-----------------------------------|
| SDEV UN3310 | ETHICS OF SUSTAINABLE DEVPT       |
| SDEV GU4050 | US WATER # ENERGY POLICY          |
| SDEV GU4350 | PUBLIC LANDS IN THE AMERICAN WEST |
| SDEV GU4600 | SPECIAL TOPICS IN SDEV # CLIMATE  |

#### Capstone Workshop

|             |                                   |
|-------------|-----------------------------------|
| SDEV UN3280 | WORKSHOP IN SUSTAINABLE DEVPT     |
| SDEV UN3550 | BANGLADSH:LIFE-TECT ACTV DELTA    |
| SDEV GU4400 | Sustainable Development in Rwanda |

! Beginning fall 2023, SDEV 1900 Introduction to Sustainable Development is no longer a required course for students in the major and special concentration. SDEV 1900 will continue to be offered every year. Please reach out to Sylvia Montijo (smontijo@climate.columbia.edu) with any questions about this change.

\* The Summer Ecosystem Experiences for Undergraduates (SEE-U): Please note that students in the major or the special concentration who take SEE-U as a 6-point course can use 3 points towards the Complex Problems requirement and 3 points towards the Skills/Action requirement. If SEE-U is taken for 3 points, it can only count as one Complex Problems class.

\*\*If choosing the senior thesis option to fulfill the elective requirements, students must take both courses in the senior thesis sequence.

\*\*\*For a full list of previously approved electives, please visit the sustainable development program website: <https://sdev.ei.columbia.edu/content/approved-electives-list>

Not please visit the Sustainable Development website for requirements:

Majors: <http://sdev.ei.columbia.edu/curriculum/major/>

## Major in Climate and Sustainability

The major in Climate and Sustainability is a joint major between the Undergraduate Program in Sustainable Development and DEES, and requires a minimum of 46.5 points, distributed as follows:

## Climate and Sustainability Foundations

Two courses:

|             |                               |
|-------------|-------------------------------|
| SDEV UN2300 | CHALLENGES OF SUSTAINABLE DEV |
| EESC UN2330 | SCIENCE FOR SUSTAINABLE DEVPT |

## Basic Disciplinary Foundations

Five courses:

### A. Natural Science Courses (2):

**Required:**

|             |                                |
|-------------|--------------------------------|
| EESC UN2100 | EARTH'S ENVIRO SYST: CLIM SYST |
|-------------|--------------------------------|

**One of the following:**

|             |   |
|-------------|---|
| EESC UN1201 | Environmental Risks and Disasters                 |
| EESC UN1600 | EARTH RESOURCES # SUSTAIN DEV                     |
| EESC UN2200 | EARTH'S ENVIRONMENTAL SYSTEMS:<br>THE SOLID EARTH |
| EESC UN2300 | EARTH'S ENVIRO SYST: LIFE SYST                    |

### B. Social Science Courses (2):

**Required:**

|             |                                 |
|-------------|---------------------------------|
| SDEV UN2100 | Introduction to Climate Justice |
|-------------|---------------------------------|

One of the following:

|             |   |
|-------------|---|
| EESC UN1201 | Environmental Risks and Disasters                 |
| EESC UN1600 | EARTH RESOURCES # SUSTAIN DEV                     |
| EESC UN2200 | EARTH'S ENVIRONMENTAL SYSTEMS:<br>THE SOLID EARTH |
| EESC UN2300 | EARTH'S ENVIRO SYST: LIFE SYST                    |

### C. Quantitative Foundations Course (1):

**One of the following:**

|             |                                |
|-------------|--------------------------------|
| STAT UN1201 | CALC-BASED INTRO TO STATISTICS |
| MATH UN2010 | LINEAR ALGEBRA                 |
| EEEB UN3005 | INTRO-STAT-ECOLOGY # EVOL BIOL |
| EESC BC3017 | ENVIRONMENTAL DATA ANALYSIS    |

Note: Taking Introduction to Statistics and Calculus separately will not fulfill the quantitative requirement.

## Climate and Sustainability: Complexities and Analyses

Four courses:

**Two courses form the following:**

|             |  |
|-------------|--|
| SDEV GU4250 | CLIMATE CHANGE: RESILIENCE #<br>ADAPTATION |
| SDEV UN3355 | CLIMATE CHANGE AND LAW                     |
| SDEV UN3366 | ENERGY LAW                                 |
| ANTH BC3932 | CLIM CHNG/GLOBAL MIGR/HUM RGT              |
| EESC GU4235 | SEA LEVEL CHANGE                           |
| EAAE E4304  | CLOSING THE CARBON CYCLE                   |

One of the following Natural Science courses:

|             |                                |
|-------------|--------------------------------|
| EESC GU4220 | GLACIOLOGY                     |
| EESC GU4235 | SEA LEVEL CHANGE               |
| EESC GU4330 | INTRO-TERRESTRIAL PALEOCLIMATE |
| EESC GU4835 | Wetlands and Climate Change    |
| EESC GU4920 | PALEOCEANOGRAPHY               |
| EESC GU4923 | Biological Oceanography        |
| EESC GU4925 | INTRO TO PHYSICAL OCEANOGRAPHY |
| EESC GU4926 | INTRO TO CHEMICAL OCEANOGRAPHY |

|             |                           |
|-------------|---------------------------|
| EESC GU4937 | CENOZOIC PALEOCEANOGRAPHY |
| EAAE E4304  | CLOSING THE CARBON CYCLE  |

One of the following Social Science courses:

|             |   |
|-------------|---|
| ANTH BC3932 | CLIM CHNG/GLOBAL MIGR/HUM RGT                   |
| ANTH UN3861 | Anthropology of the Anthropocene                |
| POLS GU4814 | GLOBAL ENERGY: SECURITY/GEOPOL                  |
| SDEV UN3355 | CLIMATE CHANGE AND LAW                          |
| SDEV UN3366 | ENERGY LAW                                      |
| SDEV GU4050 | US WATER # ENERGY POLICY                        |
| ECON BC3039 | Environmental and Natural Resource<br>Economics |

## Electives

Select two courses from the following areas. If you select Area 1, you must complete two thesis courses, and these will fulfill the elective requirement:

**Area 1:**

|             |                |
|-------------|----------------|
| EESC UN3901 | SENIOR SEMINAR |
|-------------|----------------|

**Area 2:**

Additional courses listed under the Climate and Sustainability: Complexities and Analysis requirement.

**Area 3:**

Additional quantitative or qualitative methods or skills courses:

|             |                                |
|-------------|--------------------------------|
| STAT UN2103 | APPLIED LINEAR REG ANALYSIS    |
| STAT UN3105 | APPLIED STATISTICAL METHODS    |
| STAT UN3106 | APPLIED MACHINE LEARNING       |
| STAT GU4203 | PROBABILITY THEORY             |
| STAT GU4204 | STATISTICAL INFERENCE          |
| STAT GU4205 | LINEAR REGRESSION MODELS       |
| STAT GU4207 | ELEMENTARY STOCHASTIC PROCESS  |
| EAAE E4257  | ENVIR DATA ANALYSIS # MODELING |
| EESC BC3050 | BIG DATA WITH PYTHON           |
| SDEV UN3390 | GIS FOR SUSTAINABLE DEVELOPMNT |
| SDEV UN3450 | SPATIAL ANALYSIS FOR SDEV      |
| SDEV GU4101 | QUAL RESEARCH METHODS SDEV     |

## Practicum

**One course:**

|             |  |
|-------------|--|
| SDEV UN3998 | SUPERVISED INDIVIDUAL RESEARCH   |
| SDEV GU4500 | SUSTAINABILITY AND THE MEANING OF<br>PLACE ON CUTTYHUNK ISLAND   |
| SDEV GU4550 | The New York City Watershed:<br>From Community Displacement to<br>Collaboration and Climate Adaptation |
| SUMA PS4734 | Earth Institute Practicum  |

## Capstone Workshop

One course:

|             |                                   |
|-------------|-----------------------------------|
| SDEV UN3280 | WORKSHOP IN SUSTAINABLE DEVPT     |
| SDEV UN3550 | BANGLADSH:LIFE-TECT ACTV DELTA    |
| SDEV GU4400 | Sustainable Development in Rwanda |

## Minor in Sustainable Development

The minor in Sustainable Development consists of five courses, enabling students to augment their education with critical interdisciplinary skills

and knowledge needed to address the urgent and complex challenges of sustainable development.

#### Minor Course Requirements

1. EESC 2330 Science for Sustainable Development (3 credits)
2. SDEV 2300 Challenges of Sustainable Development (3 credits)
3. One course from Analysis & Solutions to Complex Problems Requirement Area (3 credits)
4. Second course from Analysis & Solutions to Complex Problems Requirement Area (3 credits)
5. One course from Skills/Actions Requirement Area (3 credits)

## For students who entered Columbia in or before the 2023-24 academic year

Concentrations are available to students who entered Columbia in or before the 2023-2024 academic year. The requirements for the Bachelor of Arts degree, and the role of the concentration in those requirements, can be found in the Academic Requirements section of the Bulletin dated the academic year when the student matriculated at Columbia and the Bulletin dated the academic year when the student was a sophomore and declared programs of study. Concentrations are not available to students who entered Columbia in or after Fall 2024.

### Special Concentration in Sustainable Development

The sustainable development foundation courses should be taken first and students should then work with the program adviser on further course selection and sequencing.

The special concentration in sustainable development requires a minimum of 9 courses and a practicum as follows:

#### Sustainable Development Foundation

|             |  |
|-------------|--|
| SDEV UN1900 | INTRO TO SUSTAINABLE DEVPT SEM (Beginning fall 2023, SDEV 1900 Introduction to Sustainable Development is no longer a required course for students in the major and special concentration. See note below.) <sup>1</sup> |
|-------------|--|

|             |                               |
|-------------|-------------------------------|
| SDEV UN2300 | CHALLENGES OF SUSTAINABLE DEV |
| EESC UN2330 | SCIENCE FOR SUSTAINABLE DEVPT |

#### Natural Science Systems

Select one of the following courses. NOTE: Associated labs are required for Physics and Environmental Biology sequence.

|             |   |
|-------------|---|
| CHEM UN1403 | GENERAL CHEMISTRY I-LECTURES  |
| EEEB UN1001 | Biodiversity  |
| EEEB UN2002 | ENVIRONMENTAL BIOLOGY II (EESC UN2310 is co-requisite with EEEB UN2002) |

|             |                                   |
|-------------|-----------------------------------|
| EESC UN1003 | Climate and Society: Case Studies |
|-------------|-----------------------------------|

|             |   |
|-------------|---|
| EESC UN1011 | Earth: Origin, Evolution, Processes, Future |
|-------------|---|

|             |              |
|-------------|--------------|
| EESC UN1030 | OCEANOGRAPHY |
|-------------|--------------|

|             |                                   |
|-------------|-----------------------------------|
| EESC UN1201 | Environmental Risks and Disasters |
|-------------|-----------------------------------|

|             |                               |
|-------------|-------------------------------|
| EESC UN1600 | EARTH RESOURCES # SUSTAIN DEV |
|-------------|-------------------------------|

|             |                                |
|-------------|--------------------------------|
| EESC UN2100 | EARTH'S ENVIRO SYST: CLIM SYST |
|-------------|--------------------------------|

|             |  |
|-------------|--|
| EESC UN2200 | EARTH'S ENVIRONMENTAL SYSTEMS: THE SOLID EARTH |
|-------------|--|

|             |   |
|-------------|---|
| EESC UN2300 | EARTH'S ENVIRO SYST: LIFE SYST (EESC UN2310 is co-requisite with EESC UN2300) |
|-------------|---|

|                           |   |
|---------------------------|---|
| PHYS UN1201 & PHYS UN1291 | GENERAL PHYSICS I and GENERAL PHYSICS I LAB |
|---------------------------|---|

#### Human Science Systems

Select one of the following courses:

|             |  |
|-------------|--|
| ANTH UN1002 | THE INTERPRETATION OF CULTURE          |
| ANTH UN1003 | The Environment                        |
| ANTH UN2004 | INTRO TO SOC # CULTURAL THEORY         |
| ANTH BC2427 | ANTHROPOLOGY OF CLIMATE CHANGE         |
| ECON UN1105 | PRINCIPLES OF ECONOMICS                |
| HIST UN2222 | NATURE # POWER: ENV HIST NORTH AMERICA |

|             |   |
|-------------|---|
| POLS UN1201 | INTRO TO AMERICAN POLITICS (Students can take POLS 1201 OR SDEV 2050) |
|-------------|---|

|             |  |
|-------------|--|
| POLS UN1501 | INTRO TO COMPARATIVE POLITICS (Students can take POLS 1501 OR POLS 1601) |
|-------------|--|

|             |                        |
|-------------|------------------------|
| POLS UN1601 | INTERNATIONAL POLITICS |
|-------------|------------------------|

|             |                            |
|-------------|----------------------------|
| SDEV UN2000 | INTRO TO ENVIRONMENTAL LAW |
|-------------|----------------------------|

|             |                                     |
|-------------|-------------------------------------|
| SDEV UN2050 | ENVIRONMENTAL POLICY AND GOVERNANCE |
|-------------|-------------------------------------|

|             |                          |
|-------------|--------------------------|
| SDEV UN3400 | HUMAN POPULATIONS # SDEV |
|-------------|--------------------------|

|             |                  |
|-------------|------------------|
| SOCI UN1000 | THE SOCIAL WORLD |
|-------------|------------------|

#### Analysis and Solutions to Complex Problems

Select two of the following courses:

|             |                                       |
|-------------|---------------------------------------|
| ANTH BC3932 | CLIM CHNG/GLOBAL MIGR/HUM RGT         |
| CIEE E3260  | ENGINEERING FOR COMMUNITY DEVELOPMENT |

|            |                          |
|------------|--------------------------|
| EAAE W4304 | Closing the carbon cycle |
|------------|--------------------------|

|            |                               |
|------------|-------------------------------|
| ECIA W4100 | MGMT # DEVPT OF WATER SYSTEMS |
|------------|-------------------------------|

|            |                          |
|------------|--------------------------|
| EEEB G4135 | Urban Ecology and Design |
|------------|--------------------------|

|             |   |
|-------------|---|
| EESC BC3032 | Agricultural and Urban Land Use: Human-Environment Interactions |
|-------------|---|

|             |                               |
|-------------|-------------------------------|
| EESC GU4600 | EARTH RESOURCES # SUSTAIN DEV |
|-------------|-------------------------------|

|             |  |
|-------------|--|
| HIST GU4811 | Encounters with Nature: The History and Politics of Environment, Health and Development in South Asia and Beyond |
|-------------|--|

|             |                               |
|-------------|-------------------------------|
| PUBH UN3100 | FUNDAMENTALS OF GLOBAL HEALTH |
|-------------|-------------------------------|

|             |   |
|-------------|---|
| PUBH GU4200 | Environment, Health, and Justice: Concepts and Practice |
|-------------|---|

|             |   |
|-------------|---|
| SDEV UN3330 | Ecological and Social Systems for Sustainable Development |
|-------------|---|

|             |                        |
|-------------|------------------------|
| SDEV UN3355 | CLIMATE CHANGE AND LAW |
|-------------|------------------------|

|             |                           |
|-------------|---------------------------|
| SDEV UN3360 | DISASTERS AND DEVELOPMENT |
|-------------|---------------------------|

|             |            |
|-------------|------------|
| SDEV UN3366 | ENERGY LAW |
|-------------|------------|

|             |                         |
|-------------|-------------------------|
| SDEV UN3410 | Cities # Sustainability |
|-------------|-------------------------|

|             |  |
|-------------|--|
| URBS UN3565 | Cities in Developing Countries: Problems and Prospects |
|-------------|--|

The Summer Ecosystem Experiences for Undergraduates (SEE-U) \*

|             |   |
|-------------|---|
| SDEV GU4650 | Building Climate Justice: Co-Creative Coastal Resilience Planning |
|-------------|---|

#### Skills/Actions

Select one of the following courses:

|            |                                |
|------------|--------------------------------|
| EAAE E4257 | ENVIR DATA ANALYSIS # MODELING |
|------------|--------------------------------|

|             |                      |
|-------------|----------------------|
| EESC BC3050 | BIG DATA WITH PYTHON |
|-------------|----------------------|

|             |                             |
|-------------|-----------------------------|
| EESC GU4050 | GLOBAL ASSMT-REMOTE SENSING |
|-------------|-----------------------------|



|   |                                |
|---|--------------------------------|
| SDEV UN2320   | ECON # FIN MTHDS FOR SDEV      |
| SDEV UN3390   | GIS FOR SUSTAINABLE DEVELOPMNT |
| SDEV UN3450   | SPATIAL ANALYSIS FOR SDEV      |
| SDEV GU4101   | QUAL RESEARCH METHODS SDEV     |
| SDEV GU4240   | Science Communication          |
| SUMA PS4100   | Sustainability Management      |
| SOCI UN3010   | METHODS FOR SOCIAL RESEARCH    |
| The Summer Ecosystem Experiences for Undergraduates (SEE-U) * |                                |

**Practicum**

Select one of the following courses:

|             |  |
|-------------|--|
| SDEV GU4500 | SUSTAINABILITY AND THE MEANING OF PLACE ON CUTTYHUNK ISLAND                                      |
| SDEV GU4550 | The New York City Watershed: From Community Displacement to Collaboration and Climate Adaptation |
| INAF U4420  | Oil, Rights and Development  |
| SDEV UN3998 | SUPERVISED INDIVIDUAL RESEARCH   |
| SUMA PS4310 | Practicum in Innovation Sustainability Leadership  |
| SUMA PS4734 | Earth Institute Practicum  |

**Capstone Workshop**

|             |                                   |
|-------------|-----------------------------------|
| SDEV UN3280 | WORKSHOP IN SUSTAINABLE DEVPT     |
| SDEV UN3550 | BANGLADSH:LIFE-TECT ACTV DELTA    |
| SDEV GU4400 | Sustainable Development in Rwanda |

! Beginning fall 2023, SDEV 1900 Introduction to Sustainable Development is no longer a required course for students in the major and special concentration. SDEV 1900 will continue to be offered every year. Please reach out to Sylvia Montijo (smontijo@climate.columbia.edu) with any questions about this change.

\* The Summer Ecosystem Experiences for Undergraduates (SEE-U): Please note that students in the major or the special concentration who take SEE-U as a 6-point course can use 3 points towards the Complex Problems requirement and 3 points towards the Skills/Action requirement. If SEE-U is taken for 3 points, it can only count as one Complex Problems class.

See Sustainable Development Website for Special Concentrators: <http://sdev.ei.columbia.edu/curriculum/special-concentration/>

**SDEV UN1900 INTRO TO SUSTAINABLE DEVPT SEM. 1.00 Point.**

The course is designed to be a free flowing discussion of the principals of sustainable development and the scope of this emerging discipline. This course will also serve to introduce the students to the requirements of the undergraduate program in sustainable development and the content of the required courses in both the special concentration and the major. The focus will be on the breadth of subject matter, the multidisciplinary nature of the scholarship and familiarity with the other key courses in the program. Offered in the Fall and Spring

| Term      | Section | Call Number | Instructor    | Times/Location                  |
|-----------|---------|-------------|---------------|---------------------------------|
| Fall 2025 | 001     | 11087       | Jason Smerdon | T 11:40am - 12:55pm<br>Room TBA |

**SDEV UN2000 INTRO TO ENVIRONMENTAL LAW. 3.00 Points.**

The course provides an overview of environmental law for students without a legal background. It examines U.S. statutes and regulations regarding air, water, hazardous and toxic materials, land use, climate change, endangered species, and the like, as well as international environmental issues. After completing the course students should be equipped to understand how the environmental laws operate, the role of the courts, international treaties and government agencies in implementing environmental protection, and techniques used in addressing these issues

| Term        | Section | Call Number | Instructor  | Times/Location   |
|-------------|---------|-------------|-------------|--|
| Spring 2025 | 001     | 11121       | Lisa Garcia | M W 4:10pm - 5:25pm<br>616 Martin Luther King Building |

**SDEV UN2050 ENVIRONMENTAL POLICY AND GOVERNANCE. 3.00 Points.**

Sustainability is a powerful framework for thinking about business, economics, politics and environmental impacts. An overview course, Environmental Policy # Governance will focus specifically on the policy elements of sustainability. With an emphasis on the American political system, the course will begin by exploring the way the American bureaucracy addresses environmental challenges. We will then use the foundations established through our understanding of the US system to study sustainable governance at the international level. With both US and international perspectives in place, we will then address a range of specific sustainability issues including land use, climate change, food and agriculture, air quality, water quality, and energy. Over the course of the semester, we will study current events through the lens of sustainability policy to help illustrate course concepts and theories

**SDEV UN2100 Introduction to Climate Justice. 3.00 Points.**

Today, it's impossible to talk about the climate crisis without talking about justice. Thanks to the continued activism of grassroots and frontline community organizers, progressive NGOs, and coalitions of small island states, climate politics are now deeply linked to questions of social justice and equity. This course introduces students to key topics and issues in climate justice in order to gain a foundational understanding of the field. Themes and topics include: theoretical frameworks of climate justice; climate justice and gender; the justice dimensions of climate adaptation and managed retreat; energy democracy and just transitions; the question of culpability and who should be held responsible for causing global warming; and historical efforts to codify justice considerations at international institutions like the UN

| Term        | Section | Call Number | Instructor     | Times/Location                          |
|-------------|---------|-------------|----------------|---|
| Spring 2025 | 001     | 17275       | Leah Aronowsky | T 4:10pm - 6:00pm<br>308a Lewisohn Hall |

**SDEV UN2300 CHALLENGES OF SUSTAINABLE DEV. 3.00 Points.**

This course provides an introduction to the field of sustainable development, drawing primarily from social science and policy studies. It offers a critical examination of the concept of sustainable development, showing how factors like economics, population, culture, politics and inequality complicate its goals. Students will learn how different social science disciplines (political science, demography, economics, geography, history, law, and sociology) approach challenges of sustainable development across a variety of topics (fisheries, climate change, air pollution, consumption, energy, conservation, and water management). The course provides students with some of the fundamental concepts, vocabulary, and analytical tools to pursue and think critically about sustainable development. Offered in the Spring

| Term        | Section | Call Number | Instructor | Times/Location                          |
|-------------|---------|-------------|------------|---|
| Spring 2025 | 001     | 11125       | Lisa Dale  | T Th 10:10am - 11:25am<br>142 Uris Hall |

**SDEV UN2320 ECON # FIN MTHDS FOR SDEV. 3.00 Points.**

Prerequisites: Principles of Economics and one semester of calculus. The objective of this course is to introduce students to the skills and methods necessary to understand and evaluate the economic and financial aspects of sustainable development. Throughout the course, students will compare competing objectives and policies through the prism of economic # financial reasoning. Environmental economics and finance are broad areas covering all the multi-faceted and complex interactions between the economic system and the natural environment. Financial markets are the primary source of signals used to direct economic activity in a capitalist global economy. Economic activity is the primary determinant of the quality and sustainability of the natural environment. Students interested in sustainable development who are unfamiliar with economics and who do not develop a facility with economic and financial concepts are severely handicapped in their efforts to increase the level of environmental responsibility embedded in economic activity. This course is intended to provide students with a flying introduction to key analytical concepts required to understand topics in environmental economics and finance and to introduce them to selected topics within the field. The first part of the course (the Analytical Toolbox) is designed to provide a set of portable skills for two sets of students: a) those who will work in fields specifically devoted to sustainable development who, as part of their work, will need to engage with sources of economic # financial information and with discourses where sustainable development is not a focus; and b) students who may end up following careers in organizations where sustainability is not the primary objective. The topics and readings in the second part of the course were chosen to facilitate a critical engagement with the broad intellectual framework underlying sustainable development from the perspective of economics and finance. The topics are intended to create a community of intellectual discourse on sustainable development that will spill over beyond the classroom to the conversations of students and alumni that will far outlive graduation. Offered in the Fall

**SDEV UN3280 WORKSHOP IN SUSTAINABLE DEVPT. 4.00 Points.**

Open to sustainable development seniors only.

The upper level undergraduate Sustainable Development Workshop will be modeled on client based graduate-level workshops, but with more time devoted to methods of applied policy analysis and issues in Sustainable Development. The heart of the course is the group project on an issue of sustainable development with a faculty advisor providing guidance and ultimately grading student performance. Students would receive instruction on methodology, group work, communication and the context of policy analysis. Much of the reading in the course would be project-specific and identified by the student research teams. Offered in Fall and Spring

| Term        | Section | Call Number | Instructor     | Times/Location                           |
|-------------|---------|-------------|----------------|--|
| Spring 2025 | 001     | 11131       | Jenna Lawrence | M W 2:10pm - 4:00pm<br>606 Lewisohn Hall |
| Spring 2025 | 002     | 11789       | Sharon Mathews | T Th 4:10pm - 6:00pm<br>302 Fayerweather |
| Fall 2025   | 001     | 11009       | Jenna Lawrence | M W 2:10pm - 4:00pm<br>Room TBA          |
| Fall 2025   | 002     | 11086       | Sharon Mathews | T Th 4:10pm - 6:00pm<br>Room TBA         |

**SDEV UN3310 ETHICS OF SUSTAINABLE DEVPT. 3.00 Points.**

Aiming to improve human conditions within many diverse environments, sustainable development seeks to create, increase and perpetuate benefit and to cease, rectify and reverse harm. Sustainable development is consequently inextricable from the fabric of ethics, woven with determinations of benefit and harm to the existence and well-being of both humans and nonhumans. Underlying such determinations are those of self- and other-regarding motivation and behavior; and underlying these are still others, of sensitivity and rationality in decision-making, whether individual, social or public. Sustainable development is interlaced with and contingent upon all these determinations, at once prescriptive and judgmental, which can be called the ethics of sustainable development. This course is divided into four main sections, of which two are intended to show the ethical fallacies of unsustainable development, and two, the ethical pathways of sustainable development. The first section focuses upon ethically problematic basic assumptions, including human (species) hegemony, happy (hedonic) materialism, and selective (data) denial. The second focuses upon ethically problematic ensuing rationalizations, including those pertaining to damages, victims, consequences and situations of climatic, chemical, biological and ecological harm. The third section responds to these rationalizations with ethically vital considerations of earth justice, environmental justice, culturally-based ethics, and sector-based ethics (water, food, place and climate ethics). Finally, the fourth section responds to the initial, longstanding problematic assumptions with a newly emergent ethical paradigm, comprising biotic wholeness, environmental integrity and the deliberative zero-goal. Tying all sections together is the central theme: to be sustainable, development must be ethical. Reflecting the collaborative quality of the field of sustainable development, the course extends to readings whose authors have all pursued their work at intersections of science and ethics, environment and ethics, policy and ethics, business and ethics, and sustainable development and ethics

| Term      | Section | Call Number | Instructor   | Times/Location                   |
|-----------|---------|-------------|--------------|----------------------------------|
| Fall 2025 | 001     | 11089       | Adela Gondek | T Th 1:10pm - 2:25pm<br>Room TBA |

**SDEV UN3330 Ecological and Social Systems for Sustainable Development. 3 Points.**

Prerequisites: *SDEV W2300* Challenges of Sustainable Development; *EESC W2330* Science for Sustainable Development.

The course focuses on basic principles in understanding ecological and social relationships and then focuses on three current topics central to Sustainable Development for in-depth study. Examples of topics to be covered are: conservation of biodiversity, payments for ecosystem services, and the ecology of food production. The emphasis will be on the multiple perspectives— environmental, social and economic— required to understand and develop solutions to problems in sustainable development. These topics will undoubtedly vary from year to year, as the course keeps pace with current topics.

**SDEV UN3355 CLIMATE CHANGE AND LAW. 3.00 Points.**

Enrollment limited to 15.

The purpose of this course is to provide students with a broad introduction to the field of climate law in the United States and at the international level. The course begins with an overview of the causes and effects of global climate change and the methods available to control and adapt to it. We then examine the negotiation, implementation and current status of the United Nations Framework Convention on Climate Change, the Kyoto Protocol, and the Copenhagen Accord. The focus then turns to the past and proposed actions of the U.S. Congress, the executive branch and the courts, as well as regional, state and municipal efforts. The Clean Air Act, the National Environmental Policy Act and the Endangered Species Act will receive special attention. We evaluate the various legal tools that are available to address climate change, including cap-and-trade schemes; carbon taxation; command-and-control regulation; litigation; securities disclosures; and voluntary action. The roles of energy efficiency, renewable energy sources, carbon capture and sequestration, and forestry and agriculture each receive close attention. Implications for international human rights, international trade, environmental justice, and international and intergenerational equity are discussed. The course concludes with examination of the special challenges posed by China; proposals for adaptation and geoengineering; and business opportunities and the role of lawyers. Offered in the Spring

| Term        | Section | Call Number | Instructor      | Times/Location                                     |
|-------------|---------|-------------|-----------------|--|
| Spring 2025 | 001     | 11908       | Michael Gerrard | M W 2:50pm - 4:10pm<br>106 Jerome L<br>Greene Hall |

**SDEV UN3360 DISASTERS AND DEVELOPMENT. 3.00 Points.**

Prerequisites: *EESC 2330*; *SDEV W2300*. Human welfare status is very unevenly distributed throughout the globe - some of us live very comfortable lives, others remain in desperate poverty showing little progress away from their condition. Between are countries that are rapidly developing and converging toward the welfare of the richest. At all levels of economic development human activities place significant pressure on the environment and threatens all of Earth's vital functions and support systems for human life. This challenge requires timely responses based on solid understanding of the human/environment interface, technological and economic approaches to mitigate adverse effects on the environment, and routes to understanding the complex dynamics of the coupled human/natural systems that can chart a pathway to improvement in the lives of the poorest and continued well-being for those who have achieved prosperity without forcing natural systems into decline or massive fluctuation. This course offers undergraduate students, for the first time, a comprehensive course on the link between natural disaster events and human development at all levels of welfare. It explores the role that natural disasters might have and have had in modulating development prospects. Any student seriously interested in sustainable development, especially in light of climate change, must study the nature of extreme events - their causes, global distribution and likelihood of future change. This course will cover not only the nature of extreme events, including earthquakes, hurricanes, floods and droughts but also their transformation into disaster through social processes. It will ultimately help students to understand the link between such extreme events, the economic/social shock they represent and development outcomes. The course will combine careful analysis of the natural and social systems dynamics that give rise to disasters and examine through group learning case studies from the many disasters that have occurred in the first decade of the 21st century. Offered in the Spring (odd years only)

**SDEV UN3366 ENERGY LAW. 3.00 Points.**

This course concerns the regulation of energy, energy resources, and energy facilities. Among the topics will be the regulation of rates and services; the roles of the Federal Energy Regulatory Commission and the state public utility commissions; and the interaction with environmental law. Attention will be devoted to energy resources (such as oil, natural gas and coal) and to generating, transmission and distribution facilities. The current and future roles of renewable energy, energy efficiency, and nuclear energy will receive special attention, as will the regulation and deregulation of electricity

| Term      | Section | Call Number | Instructor      | Times/Location                |
|-----------|---------|-------------|-----------------|-------------------------------|
| Fall 2025 | 001     | 11379       | Michael Gerrard | T 4:20pm - 6:10pm<br>Room TBA |

**SDEV UN3390 GIS FOR SUSTAINABLE DEVELOPMNT. 3.00 Points.**

This course is designed to provide students with a comprehensive overview of theoretical concepts underlying GIS systems and to give students a strong set of practical skills to use GIS for sustainable development research. Geographic Information Systems (GIS) are a system of computer software, data and analysis methods used to create, store, manage, digital information that allow us to create maps and dynamic models to analyze the physical and social processes of the world. Through a mixture of lectures, readings, focused discussions, and hands-on exercises, students will acquire an understanding of the variety and structure of spatial data and databases, gain knowledge of the principles behind raster and vector based spatial analysis, and learn basic cartographic principles for producing maps that effectively communicate a message. Student will also learn to use newly emerging web based mapping tools such as Google Earth, Google Maps and similar tools to develop on-line interactive maps and graphics. The use of other geospatial technologies such as the Global Positioning System will also be explored in this class. Case studies examined in class will draw examples from a wide ranges of GIS applications developed to assist in the development, implementation and evaluation of sustainable development projects and programs. On completion of the course, students will: 1. use a variety of GIS software programs to create maps and reports; 2. develop a sound knowledge of methods to search, obtain, and evaluate a wide variety of spatial data resources; 3. develop skills needed to determine best practices for managing spatial data resources; 4. use GIS to analyze the economic, social and environmental processes underlying the concept of building a sustainable world; 5. Gain an understanding of the limits of these technologies and make assessments of uncertainty associated with spatial data and spatial analysis models. Offered in the fall and spring

| Term        | Section | Call Number | Instructor      | Times/Location                                  |
|-------------|---------|-------------|-----------------|---|
| Spring 2025 | 001     | 12980       | Linda Pistolesi | T 10:10am - 11:25am<br>252 Engineering Terrace  |
| Spring 2025 | 001     | 12980       | Linda Pistolesi | Th 10:10am - 12:25pm<br>252 Engineering Terrace |
| Fall 2025   | 001     | 11005       | Kytt MacManus   | M 10:10am - 11:25am<br>Room TBA                 |
| Fall 2025   | 001     | 11005       | Kytt MacManus   | W 10:10am - 12:25pm<br>Room TBA                 |

**SDEV UN3400 HUMAN POPULATIONS # SDEV. 3.00 Points.**

Population processes and their outcomes in terms of population size and distribution have a fundamental role in sustainable development and also broad policy implications. This course will introduce students to the scientific study of human populations as a contribution toward understanding social structure, relations, and dynamics, as well as society-nature interactions. The aim is to offer a basic introduction to the main theories, concepts, measures, and uses of demography. The course will cover the issues of population size, distribution and composition, and consumption, at different scales from global to regional to local, as well as the implications for population-environment relationships. It will also address the fundamental demographic processes of mortality, fertility and migration, including their trends and transitions, We will consider these topics in the context of economic development, sustainability and cultural change. The course will also include an overview of basic demographic techniques and tools used for identifying, managing, analyzing and interpreting population data, and an introduction to population projections. Lab sessions will supplement readings and lectures by enabling students to explore data sources, calculate rates, and graphically represent demographic data. Offered in the Fall (even years).

**SDEV UN3410 Cities # Sustainability. 3.00 Points.**

In an increasingly urban world, sustainable development is not possible without achieving sustainability in cities. This course explores the challenges and opportunities of sustainable development policy-making at the urban level through the study of local efforts to address climate change, provide access to clean water, and develop renewable energy resources, among other topics. Students will gain a more detailed understanding of how cities' histories, land use patterns, and economies influence urban resource use, and how cities have attempted to change those impacts. Using case studies of local sustainability initiatives, students examine how a city's governance structure, political dynamics, and administrative capacity affect policy outcomes. Consideration of the equity implications of urban sustainability efforts is integral to the course

| Term        | Section | Call Number | Instructor     | Times/Location                         |
|-------------|---------|-------------|----------------|--|
| Spring 2025 | 001     | 11692       | Deborah Morris | T 6:10pm - 8:00pm<br>401 Hamilton Hall |

**SDEV UN3450 SPATIAL ANALYSIS FOR SDEV. 3.00 Points.**

Priority given to sustainable development senior and juniors.

This is an intermediate course in spatial modeling developed specifically for students in the Undergraduate Sustainable Development program. This course will provide a foundation for understanding a variety of issues related to spatial analysis and modeling. Students will explore the concepts, tools, and techniques of GIS modeling and review and critique modeling applications used for environmental planning and policy development. The course will also offer students the opportunity to design, build and evaluate their own spatial analysis models. The course will cover both vector and raster based methods of analysis with a strong focus on raster-based modeling. We will draw examples from a wide range of applications in such areas as modeling Land Use and Land Cover for biodiversity and conservation, hydrological modeling, and site suitability modeling. The course will consist of lectures, reading assignments, lab assignments, and a final project

| Term        | Section | Call Number | Instructor    | Times/Location   |
|-------------|---------|-------------|---------------|--|
| Spring 2025 | 001     | 11136       | Kytt MacManus | M 10:10am - 11:25am<br>327 Uris Hall                   |
| Spring 2025 | 001     | 11136       | Kytt MacManus | W 10:10am - 12:25pm<br>606 Martin Luther King Building |

**SDEV UN3550 BANGLADSH:LIFE-TECT ACTV DELTA. 4.00 Points.**

Open to sustainable development seniors only.

This course will explore the interaction of riverine processes, water and hydrology, sedimentary processes, tectonics, land subsidence and sea level rise, environmental issues, cultural setting, and sustainable development in the world's largest delta. The course will explore both the hazards and resources for life in this dynamic environment through lectures, a field trip to Bangladesh during Spring Break and guest lecturers in earth and social sciences. During the field trip, we will be joined by Dhaka University professors and students, providing experience in cross-cultural collaboration, as well as translators to interviews and discussions with Bangladeshis. By the end of the course, students will develop a quantitative understanding of the multiple earth sciences issues. It will also provide a perspective on the mixture of competing earth science, social, historical and political issues that must be addressed in order to effectively address environmental issues. Students should acquire an ability to assess competing claims and projections for future environmental change

| Term        | Section | Call Number | Instructor       | Times/Location                           |
|-------------|---------|-------------|------------------|--|
| Spring 2025 | 001     | 17277       | Michael Steckler | T 12:10pm - 2:00pm<br>308a Lewisohn Hall |

**SDEV UN3998 SUPERVISED INDIVIDUAL RESEARCH. 1.00-3.00 Points.**

Sustainable development majors and special concentrators must register for this independent study to use internship hours for the practicum credit. Students must consult with their program adviser and department before registering. Offered fall, spring and summer

| Term        | Section | Call Number | Instructor   | Times/Location |
|-------------|---------|-------------|--------------|----------------|
| Spring 2025 | 001     | 11142       | Adela Gondek |                |
| Fall 2025   | 001     | 11006       | Adela Gondek |                |

**SDEV GU4015 Complexity Science. 3 Points.**

The Complexity Course is a survey of techniques, applications, and implications of complexity science and complex systems. This course aims to be both an introduction for students from other fields, and a forum for continued discussion within the complexity community. Topics include systems dynamics, chaos, scaling, fatted distributions, fractals, information theory, emergence, criticality, agentbased models, graph theory, and social networks.

**SDEV GU4050 US WATER # ENERGY POLICY. 3.00 Points.**

Course Summary: Water, one of humankind's first power sources, remains critically important to the task of maintaining a sustainable energy supply, in the United States and elsewhere. Conversely, the need to provide safe drinking water and keep America's rivers clean cannot be met without access to reliable energy supplies. As the impact of climate disruption and other resource constraints begins to mount, the water/energy nexus is growing increasingly complex and conflict-prone. Essential Connections begins by examining the development of America's water and energy policies over the past century and how such policies helped to shape present-day environmental law and regulation. Our focus then turns to the current state of US water and energy resources and policy, covering issues such as oil and gas exploration, nuclear energy, hydroelectric power and renewables. We also examine questions of inclusion and equity in connection with the ways in which communities allocate their water and energy resources and burdens along racial, ethnic and socioeconomic lines. The third and final section of the course addresses the prospects for establishing water and energy policies that can withstand climate disruption, scarcity and, perhaps most importantly, America's seemingly endless appetite for political dysfunction. By semester's end, students will better understand the state of America's energy and water supply systems and current efforts to cope with depletion, climate change and related threats affecting these critical, highly-interdependent systems. As a final project, students will utilize the knowledge gained during the semester to create specific proposals for preserving and enhancing the sustainability of US water and energy resources

| Term        | Section | Call Number | Instructor | Times/Location                                       |
|-------------|---------|-------------|------------|--|
| Spring 2025 | 001     | 11146       | Paul Gally | M 4:10pm - 6:00pm<br>609 Martin Luther King Building |

**SDEV GU4101 QUAL RESEARCH METHODS SDEV. 3.00 Points.**

Students of sustainable development are faced with an array of global challenges that warrant scholarly inquiry. Social science questions are particularly well suited for qualitative research. This course will provide an overview of social science research methods, with a focus on building a toolkit for undergraduate students. We begin with an overview of the science of knowing. How do we generate scientific hypotheses in the social sciences, and then how can we find out whether those hypotheses are accurate? An exploration of a range of qualitative research methods will occupy the majority of our class time, including interviewing, case studies, questionnaires, surveys, coding, and participant observation. Toward the end of the course we consider how mixed methods allow for the integration of quantitative tools in the social sciences. Throughout, students will both study and practice these research methods, experimenting to better understand the strengths and challenges associated with each approach. The course will end with poster presentations in which students share their own research and justify the methods they have employed

**SDEV GU4250 CLIMATE CHANGE: RESILIENCE # ADAPTATION. 3.00 Points.**

This course will offer a focused study of climate change adaptation policy, exploring dimensions of adaptation across sectors and scales. With a thematic focus on pervasive global inequities, students will also consider challenges associated with international development and disaster risk management. An inter-disciplinary framework will enrich the course, and students will learn about perspectives from the natural sciences, law, architecture, anthropology, humanitarian aid, and public policy. The online intensive version of this course will combine synchronous and asynchronous learning: twice weekly live discussion sessions will be matched with assigned readings, recorded lectures and videos

**SDEV GU4325 Plants, Animals and Personhood. 3.00 Points.**

This course is intended to be an opportunity to review the relation between the word “person” and plants and animals, with whom humans abide in a biosphere with no natural boundaries or territories. While personhood is a recognition of human capability and agency, we have not taken many steps in the direction of recognizing the capability and agency of plants and animals. Moreover, it is clear that we have diminished many of their functions and even annihilated many of their entire populations. Nonetheless, there is movement to change this. In our course, three major features of personhood are explored: standing, rights and identity. Each of these three features are divided into two types: legal and spiritual standing, juridical and birth rights, and empirical and narrative identities. Animals and plants are discussed in the context of each of the six types; and are discussed in that order (animals first and plants second) because the movement to change the existing conditions has been more active in relation to animals than to plants. The growing tendency to blend both plant personhood and animal personhood into environmental or Nature personhood will also be explored. The overall aim is to help reverse the deleterious conditions generated by the Anthropocene, in which we, and the plants and animals, struggle to live

| Term        | Section | Call Number | Instructor   | Times/Location                                 |
|-------------|---------|-------------|--------------|--|
| Spring 2025 | 001     | 18639       | Adela Gondek | T Th 1:10pm - 2:25pm<br>313 Pupin Laboratories |

**SDEV GU4350 PUBLIC LANDS IN THE AMERICAN WEST. 3.00 Points.**

The course fulfills the “complex problems” major requirement for the Undergraduate Program in Sustainable Development (UPSD). The American West is perhaps best known for the dramatic landscapes managed through a web of federal land management agencies. Indeed, western states have a land base that is at least 35% public, and competing interests vie for limited resources and navigate a complex bureaucracy. Less well understood are the dynamics that arise from the interactions among different land ownership categories: federal, state, and private. Working landscapes are essential pieces of the cultural heartbeat of the region. This course will focus on: 1) the history of western settlement, highlighting the ways in which early Westerners divided up the land base and allocated resources; 2) the agencies in charge of managing federal public land including the U.S. Forest Service, U.S. Bureau of Land Management, and U.S. Park Service; and 3) state and private land, with a particular interest in the State Land Board. We will explore the legal and regulatory framework that guides land-use decisions, and study enduring resource access conflicts. Pulling from both academic scholarship and the gray literature in political science, environmental sciences, law, and organizational behavior, this course provides an interdisciplinary overview of governance challenges in the American West. Academic Schedule The course will start on Tuesday, May 31st and meet on Tuesdays/Wednesdays/Thursdays on Zoom (likely from 2-5 pm EST each day). The week of June 12th-19th the course will take place in the field in Colorado. The final week will be on Zoom on Tuesday, Wednesday Thursday, again likely from 2-5 pm EST each day. The course ends on Thursday, June 23rd. Modality The course will be offered in a hybrid format. The first two weeks and final (fourth) week of the class will be held entirely on Zoom. We will meet three times per week (Tues/Wed/Thurs) for three hours each session. Week three of the course (June 12-19) will be held in person in Colorado. There, we have the opportunity to visit a broad spectrum of land use types including federally managed forest and grasslands, protected parks, state land board parcels, and private ranches. Student will have some access to local leaders who will accompany us on various field trips to offer their perspectives. The class will participate in many kinds of field activities including hiking in federally designated Wilderness areas, visiting an oil and gas well on public lands, exploring an area recently burned by wildfire, and meeting with rural ranchers. To enroll in this course, you must apply to the Columbia Summer Field Course: Public Lands in the American West through the Center for Undergraduate Global Engagement (UGE)

**SDEV GU4400 Sustainable Development in Rwanda. 4.00 Points.**

This travel course will give students the opportunity to explore what sustainable development means in the context of Sub-Saharan Africa. Satisfying the workshop requirement for SDEV majors, the course is organized around two projects that students will tackle in teams. Ahead of traveling to Rwanda, three main activities will structure the course. First, students will learn about colonial history and current sustainable development efforts in Sub-Saharan Africa. Second, they will be organized into teams to pursue preliminary research on one of two projects. Third, they will be paired with an undergraduate student at the University of Rwanda and begin regular correspondence using WhatsApp. The travel week will be held over spring break. We will be based in the capitol city Kigali, with some in-country travel to explore beyond the urban core. Students will work in teams alongside their University of Rwanda peers to advance the goals of their project. When we return to the U.S., the final weeks of the class will be devoted to focused team work, as students complete their projects

| Term        | Section | Call Number | Instructor | Times/Location                           |
|-------------|---------|-------------|------------|--|
| Spring 2025 | 001     | 11151       | Lisa Dale  | T 12:10pm - 2:00pm<br>212d Lewisohn Hall |

**SDEV GU4420 Oil, Rights # Development. 1.00 Point.**

The Simulation class has as its purpose to familiarize and inform the student participants with the real-life interests, objectives, constraints, working and strategies of the range of stakeholders concerned or engaged with a large natural resource development project (oil) in a developing and civil war torn country. It challenges the students, as members of pre-assigned teams with different goals and objectives, as well as values, to seek ways to reconcile, to the extent possible, through discussion and negotiation the different and even conflicting interests, goals and strategies of the multiple stakeholders. These stakeholders include the governing parties, opposition parties, local and international NGOs, local and international media and think tanks, as well as two oil companies, including one from an authoritarian country, competing for the oil development contract

**SDEV GU4500 SUSTAINABILITY AND THE MEANING OF PLACE ON CUTTYHUNK ISLAND. 1.00 Point.**

In this class, students will travel to Cuttyhunk Island in Massachusetts to explore issues of history, sustainability, and climate change. It will serve to address the one-credit practicum requirement in the Undergraduate Program in Sustainable Development. The overarching question students will ask is: what does it mean to inhabit a place well? To answer this, students will read a selection of literary, historical, and scientific texts while performing physical labor including meal preparation and oyster cultivation on Cuttyhunk Island and assuming responsibility for their classmate community through self-governance. Taught in collaboration with faculty at the Gull Island Institute, the course enables students to critically investigate multiple ways in which knowledge of place is produced and to explore how such knowledge informs, and ought to inform, practices of sustainable development. In traveling to Cuttyhunk Island, students will take up a standpoint from which to consider their own learning goals and develop approaches to more fruitfully engaging the places of Manhattan Island and the Columbia University campus in the course of their SDEV studies. The class will use the physical setting of islands, and the conjunction of seminar with labor, self-governance, and everyday life, to connect different kinds of knowledge across boundaries of discipline and tradition, thought, and embodied practice. Students will analyze written texts, but they will also be challenged to read and interpret a piece of the landscape, an object, or ecosystem through their immersive experience on Cuttyhunk Island. Readings will investigate the natural and human histories of the Buzzards Bay region, contemporary sustainability efforts on Cuttyhunk, as well as the wider assumptions and categories that shape the ideas of sustainability and habitability: what models of action and agency are entailed in these concepts? What relationships between humans and non-human (beings and environments) do such concepts presuppose? Finally, what skills, structures, and actions are necessary to make places habitable, and inhabit them well?

| Term        | Section | Call Number | Instructor    | Times/Location |
|-------------|---------|-------------|---------------|----------------|
| Spring 2025 | 001     | 20387       | Jason Smerdon |                |

**SDEV GU4501 History of the Climate Crisis. 4.00 Points.**

The climate crisis is a defining feature of contemporary life. How did we get here? This course considers the historical, social, ethical, and political life of global warming in an effort to better understand the present climate age. Themes and topics include: the origins of fossil fuel-based energy systems and the cultural life of oil; the history of climate science and the geopolitics of climate knowledge production; the emergence of climate change as a global political issue; debates about political responses to climate change versus market-based approaches; the question of culpability and who should be held responsible for causing global warming; and the recent emergence of a global climate justice movement and its relationship to racial justice and indigenous rights movements

**SDEV GU4550 The New York City Watershed: From Community Displacement to Collaboration and Climate Adaptation. 1.00 Point.**

The New York City Watershed: From Community Displacement to Collaboration and Climate Adaptation brings students to the Catskill Mountains in upstate New York to learn first hand from researchers and practitioners who help supply over ten million New Yorkers with safe and abundant drinking water while also working to build social, economic and environmental capital in the towns and villages located in the watershed surrounding the city's reservoirs – all against a backdrop of increasing climate-related disruption. The class will learn how New York City and a coalition of upstate watershed communities worked to end nearly a century of mutual resentment, displacement and extraction by entering into the Watershed Agreement of 1997, which has become a widely renowned model for collaborative and equitable water resources management planning in the twenty-five years since its completion. Students will engage with several of the Watershed Agreement's original negotiators and with the local elected officials, agency staff and non-profit leaders who implement its signature "multi-barrier" strategy for drinking water protection through open space preservation, support for sustainable farming practices and investments in clean water infrastructure and sustainable economic growth in watershed communities. They will also learn how increases in storm intensity and warming driven by climate change threaten to upset the delicate balance between New York City's need for safe drinking water and the socio-economic interests of upstate watershed communities. Upon completion of the course, students will better understand the challenges involved in creating and implementing collaborative, multi-stakeholder plans for water resource management and host community benefits in today's increasingly climate-disrupted world

| Term      | Section | Call Number | Instructor | Times/Location |
|-----------|---------|-------------|------------|----------------|
| Fall 2025 | 001     | 11008       |            |                |

**SDEV GU4600 SPECIAL TOPICS IN SDEV # CLIMATE. 3.00 Points.**

A novel course on the history of understanding of global climate crisis during the Cold War period and a role of science in the agenda of global climate change aims to demonstrate the connections of present state of knowledge and policy with the trajectory of the past. How much this past (s) could and should be useful is the focus of the discussions in the class. The discussions are based on historical narratives, including the history of institutional landscape of science, impacts of individual scientists, imaginaries of the future in the past. All narratives are imbedded in a larger socio-economic and political context. The unique dimension of the course is the inclusion of Soviet climate science which is considered as a global force with a significant knowledge circulations and participation in international organizations. The course is useful for climate students as well as for history and political science students

**SDEV GU4650 Building Climate Justice: Co-Creative Coastal Resilience Planning. 3.00 Points.**

This course will educate students and support effective coastal resilience planning and climate justice through social and data science learning and data acquisition and analysis, making use of emerging technologies and best practices for collaboration with environmental and climate justice practitioners. Instruction is provided in two areas: i. Climate adaptation planning # climate justice; and, ii. Data science: acquisition, analysis and visualization. Students and instructors will work with participating community-based climate and environmental justice organizations to collect and analyze biological, geographic and socio-economic data relevant to local resilience needs. Once this data has been acquired or generated and quality-assured, the students and community partner organizations will prepare it for presentation to federal, state and local planning officials, to help ensure that the resilience goals and related concerns identified by our community partners will be fully reflected in future planning by those officials. Upon completion of the course, students will better understand the challenges involved in creating and implementing collaborative, data-informed, multi-stakeholder plans for coastal resilience and ecosystem restoration in today's increasingly climate-disrupted world. Successful completion of this course will partially fulfill the Analysis and Solutions to Complex Problems coursework requirement within the Undergraduate Major in Sustainable Development

| Term      | Section | Call Number | Instructor                       | Times/Location                |
|-----------|---------|-------------|----------------------------------|-------------------------------|
| Fall 2025 | 001     | 11007       | Gregory Yetman,<br>Paul Galloway | W 2:10pm - 4:00pm<br>Room TBA |
| Fall 2025 | 001     | 11007       | Gregory Yetman,<br>Paul Galloway | M 4:10pm - 5:25pm<br>Room TBA |

**SDEV GU4660 Biodiversity and the Climate Crisis. 3.00 Points.**

The 'twin crises' of biodiversity and climate change are inextricably linked. Biodiversity, much like climate, is a fundamental characteristic of our Earth system and includes not only individual plant, animal, and microbial species, but also their ecological interactions at local, regional, and global scales. Climate change is exacerbating biodiversity loss, which further reduces ecosystem resilience and efficiency, jeopardizing the delivery of services essential to human well-being such as water purification, flood control, soil fertility, pollination and seed dispersal, temperature moderation, direct material and non-material benefits, carbon sequestration, control of non-indigenous species, and regulation of zoonotic diseases. In this course we will use a combination of lectures, student-led discussions, and research papers to explore these interconnections, focusing on food security, habitat types, tipping points, equity, and how biodiversity can both support and be affected by climate mitigation and adaptation strategies

| Term        | Section | Call Number | Instructor     | Times/Location                         |
|-------------|---------|-------------|----------------|--|
| Spring 2025 | 001     | 18238       | Jenna Lawrence | M 4:10pm - 6:00pm<br>607 Hamilton Hall |

**SDEV GU4670 ENVIRONMENTAL JUSTICE: A LEGAL FRAMEWORK FOR ADVOCACY. 3.00 Points.**

The primary goals of environmental justice advocacy are to ensure the equitable treatment and meaningful participation of historically impacted communities in environmental and climate related matters. The movement is deeply rooted in civil rights, human rights, and environmental law. In this course, we will explore the legal framework that advances environmental justice on the local, state, and federal levels. Our course will also explore the interdependent relationship between environmental justice and sustainability. Students will take a hands-on approach to environmental justice and will develop key advocacy skills that practitioners use for the communities that they serve. This course will engage students in a critical analysis of existing environmental justice issues to develop a holistic approach for more effective advocacy

| Term        | Section | Call Number | Instructor             | Times/Location                              |
|-------------|---------|-------------|------------------------|---|
| Spring 2025 | 001     | 11693       | Christine Appah-Gyamfi | F 12:00pm - 2:00pm<br>652 Schermerhorn Hall |

**SDEV GU4680 Climate and Sustainable Water Systems. 3.00 Points.**

Sustainable water supply, essential for life, is complex and challenging, particularly in the context of climate change. Changing climate affects the availability and quality of water globally. In turn, human use of water produces greenhouse gasses (GHGs) that further exacerbate climate change. Spanning global and individual scale, this course will examine changing interactions of climate and water, implications for human water supply, and steps toward greater sustainability. Part 1 of the course establishes baseline understanding of natural and human water systems in the context of climate change. What it takes to transform water from its source to "fit-for-purpose" water for domestic, commercial, industrial, and agricultural uses will be examined. The implications of climate change for water systems and the impacts of water development on climate change will also be assessed. The growing challenges of water security, water quality, and water affordability/accessibility will be considered, along with institutional models for water delivery. Part 2 will delve into pathways toward more sustainable water supplies, with emphasis on safe and affordable drinking water. Means of adaptation and resilience will be explored, from evolving human uses to optimizing water storage and delivery. Throughout Part 2, case studies will bring concepts to reality, engaging students in further exploring strategies and actions to address crucial issues for water sustainability. Practicing leaders from the water field will bring real-world perspectives as guest speakers, sharing direct experience with a specific problem, and engaging with the class in a broader discussion of the issues, led by the instructor

| Term        | Section | Call Number | Instructor      | Times/Location                              |
|-------------|---------|-------------|-----------------|---|
| Spring 2025 | 001     | 18044       | Cynthia Paulson | W 2:10pm - 4:00pm<br>Bwy Alfred Lerner Hall |

## Of Related Interest

**Analysis of Climate and Earth Systems**

|             |   |
|-------------|---|
| EESC BC3017 | ENVIRONMENTAL DATA ANALYSIS               |
| EESC GU4008 | Introduction to Atmospheric Science       |
| EESC GU4917 | THE EARTH/HUMAN INTERACTIONS              |
| EESC GR6901 | Research Computing for the Earth Sciences |

**Disasters and Health**

|            |  |
|------------|--|
| ANTH V3924 | Anthropology and Disaster                    |
| ANTH V3971 |  |
| INAF U6760 | Managing Risk in Natural and Other Disasters |

**Economics**



|             |  |
|-------------|--|
| ECON UN2257 | THE GLOBAL ECONOMY                             |
| ECON BC3029 | EMPIRICAL APPROACHES DEVLPMNT                  |
| ECON UN3211 | INTERMEDIATE MICROECONOMICS                    |
| ECON UN3213 | INTERMEDIATE MACROECONOMICS                    |
| ECON GU4301 | ECONOMIC GROWTH # DEVELOPMNT I                 |
| ECON GU4370 | POLITICAL ECONOMY                              |
| ECON GU4500 | INTERNATIONAL TRADE                            |
| ECON G4527  | Economic Organization and Development of China |
| ECON W4625  | Economics of the Environment                   |
| SUMA PS4190 | ECONOMICS OF SUSTAINABILITY MANAGEMENT         |

#### Energy and Engineering

|            |  |
|------------|--|
| ANTH V3872 | From Physics Labs to Oil Futures: Social Studies of Energy |
| INAF U6242 | Energy Policy  |
| INAF U8778 | Distributed Energy Economics, Technology, and Policy       |
| EAAE E3103 | ENERGY,MINERALS,MATERIALS SYST                             |
| CIEE E4252 |  |
| EAAE E4001 | INDUST ECOLOGY-EARTH RESOURCES                             |
| EAAE E3900 | UNDERGRAD RES-ENVIRONMTL ENGIN                             |

#### Food, Health and Ecology

|              |   |
|--------------|---|
| EEEB UN3087  | CONSERVATION BIOLOGY                                    |
| EEEB W4122   | Fundamentals of Ecology and Evolution                   |
| EEEB GU4260  | FOOD, ECOLOGY # GLOBALIZATION                           |
| HSPB W3950   | Social History of American Public Health                |
| PUBH GU4200  | Environment, Health, and Justice: Concepts and Practice |
| SOCI V2230   | Food and the Social Order                               |
| SUMA PS4235  | The Science of Urban Ecology                            |
| SUMA PS 5030 | Hungry City Workshop                                    |

#### Law, Policy and Human Rights

|             |  |
|-------------|--|
| EEEB GU4321 | HUM NATURE:DNA,RACE # IDENTITY   |
| EEEB GU4700 | RACE:TANGLED HIST-BIOL CONCEPT   |
| ENVP U6236  | Origins of Environmental Law: Regulation & Evolution                             |
| HIST W4400  | Americans and the Natural World, 1800 to the Present                             |
| HRTS UN3001 | INTRODUCTION TO HUMAN RIGHTS   |
| HRTS BC3850 | HUMAN RIGHTS # PUBLIC HEALTH   |
| POLS BC3805 | *Colloquium on International Organization  |
| INAF U4545  | Contemporary Diplomacy   |
| INAF U6243  | International Environmental Policy   |
| JWST G4610  | Environment and Sustainability in Israel à €“ Between the Local and the Regional |
| SCNC W3010  |  |
| SDEV UN3310 | ETHICS OF SUSTAINABLE DEVPT  |
| SDEV GU4350 | PUBLIC LANDS IN THE AMERICAN WEST  |
| SOCI UN3020 | Social Statistics  |
| SOCI UN3235 | SOCIAL MOVEMENTS   |
| SOCI UN3324 | Global Urbanism  |
| SOCI UN3960 | SEMINAR - PROBLEMS OF LAW # SOCIETY  |
| POLS V3212  | Environmental Politics   |
| REGN U6639  | Gender and Development in Southeast Asia   |

|             |   |
|-------------|---|
| POLS UN3604 | War, Peace, and International Interventions in Africa |
| POLS UN3690 | International Law                                     |
| CGTH UN3402 | YOUTH-INTERCONNECTED WRLD                             |

#### Urban Studies/Urbanization

|             |   |
|-------------|---|
| URBS V3200  | Spatial Analysis: GIS Methods and Urban Case Studies  |
| URBS UN3565 | Cities in Developing Countries: Problems and Prospects  |
| PLAN A4579  | Introduction to Environmental Planning  |
| SUMA PS4130 | Sustainable Cities  |
| SUMA PS4330 | Disaster Risk Management and Sustainable Urban Resilience   |
| SUMA PS4490 | Women in Cities: Integrating Needs, Rights, Access and Opportunity into Sustainable Urban Design, Planning and Management |

#### Waste Management and Pollution

|             |                                |
|-------------|--------------------------------|
| EAAE E4009  | GIS-RES,ENVIR,INFRASTRUCTR MGT |
| EAAE E4150  | AIR POLLUTION PREVENTION/CONTR |
| EAAE E4160  | SOLID # HAZARDOUS WASTE MGMT   |
| EAAE E4257  | ENVIR DATA ANALYSIS # MODELING |
| EESC BC3033 | Waste Management               |
| CIEE E3255  |                                |

#### Water

|             |                                |
|-------------|--------------------------------|
| EAAE E4350  | PLANNG/MGT-URBAN HYDROLGC SYST |
| EEEB W4110  | Coastal and Estuarine Ecology  |
| EEEB GU4195 | MARINE CONSERVATION ECOLOGY    |
| ECIA W4100  | MGMT # DEVPT OF WATER SYSTEMS  |
| CIEE E3250  |                                |
| CIEE E4163  |                                |
| SDEV GU4050 | US WATER # ENERGY POLICY       |
| SUMA PS4145 | Science of Sustainable Water   |