

School of the Environment 2022–2023



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School of the
Environment
2022–2023

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CALENDAR

The following dates are subject to change as the University makes decisions regarding the 2022–2023 academic year. Changes will be posted online on the School of the Environment's website.

FALL 2022

Aug. 4	TH	International Orientation for new students
Aug. 5	F	Orientation for new students
Aug. 8–25	M–TH	MODS (“Field Modules”) for new students
Aug. 30	T	Online Course Registration Opens
Sept. 5	M	Labor Day; offices closed; classes do not meet
Sept. 13	T	Add/Drop period ends
Oct. 18	T	October recess begins, 7:30 p.m.
Oct. 24	M	Classes resume, 8:20 a.m.
Oct. 28	F	Midterm
Nov. 18	F	November recess begins, 7:30 p.m.
Nov. 28	M	Classes resume, 8:30 a.m.
Dec. 9	F	Last day of classes
Dec. 12–15	M–TH	Reading period
Dec. 16–21	F–W	Final examinations
Dec. 21	W	Fall term ends; winter recess begins 5 p.m.

SPRING 2023

Jan. 2	M	Fall-term grades due
Jan 9	M	Online course registration opens 8 a.m.
Jan. 16	M	Online course registration closes 11:59 p.m. Martin Luther King Jr. Day; offices closed; classes do not meet
Jan. 17	T	Spring-term classes begin, 8:20 a.m. Beginning of add/drop period
Jan. 27	F	Add/Drop period ends
Mar. 10	F	Midterm Spring recess begins, 7:20 p.m.
Mar. 27	M	Classes resume, 8:20 a.m.
Apr. 28	F	Classes end, reading period begins, 5:30 p.m.
May 5–10	F–W	Final examinations
May 10	W	Spring term ends, 5:30 p.m.
May 15	M	Spring-term grades due for graduating students
May 22	M	University Commencement
May 31	W	Spring-term grades due for continuing students

THE PRESIDENT AND FELLOWS OF YALE UNIVERSITY

President

Peter Salovey, A.B., A.M., Ph.D.

Fellows

His Excellency the Governor of Connecticut, *ex officio*

Her Honor the Lieutenant Governor of Connecticut, *ex officio*

Joshua Bekenstein, B.A., M.B.A., Wayland, Massachusetts

Michael James Cavanagh, B.A., J.D., Philadelphia, Pennsylvania

Charles Waterhouse Goodyear IV, B.S., M.B.A., New Orleans, Louisiana

Catharine Bond Hill, B.A., B.A., M.A., Ph.D., Bronx, New York

William Earl Kennard, B.A., J.D., Charleston, South Carolina

Frederic David Krupp, B.S., J.D., Norwalk, Connecticut (*June 2028*)

Reiko Ann Miura-Ko, B.S., Ph.D., Menlo Park, California (*June 2025*)

Carlos Roberto Moreno, B.A., J.D., Los Angeles, California (*June 2026*)

Emmett John Rice, Jr., B.A., M.B.A., Bethesda, Maryland

Joshua Linder Steiner, B.A., M.St., New York, New York

David Li Ming Sze, B.A., M.B.A., Hillsborough, California

David Anthony Thomas, B.A., M.A., M.A., Ph.D., Atlanta, Georgia (*June 2027*)

Kathleen Elizabeth Walsh, B.A., M.P.H., Boston, Massachusetts (*June 2023*)

Michael James Warren, B.A., B.A., Washington, D.C. (*June 2024*)

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Provost

Benjamin Polak, B.A., M.A., Ph.D.

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Senior Vice President for Operations

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Senior Vice President for Institutional Affairs and General Counsel

Alexander Edward Dreier, A.B., M.A., J.D.

Vice President for Finance and Chief Financial Officer

Stephen Charles Murphy, B.A.

Vice President for Alumni Affairs and Development

Joan Elizabeth O'Neill, B.A.

Vice President for Global Strategy

Pericles Lewis, B.A., A.M., Ph.D.

Vice President for Communications

Nathaniel Westgate Nickerson, B.A.

Vice President for Human Resources

John Whelan, B.A. J.D.

FACULTY AND ADMINISTRATION

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Scott Strobel, Ph.D., Provost of the University

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Mark S. Ashton, M.F., Ph.D., Morris K. Jesup Professor of Silviculture and Forest Ecology; and Senior Associate Dean of the Forest School (on leave, fall 2022)

Michelle L. Bell, M.S.E., Ph.D., Mary E. Pinchot Professor of Environmental Health; and Professor of Environmental Health, School of Public Health (on leave, fall 2022)

Gaboury Benoit, M.S., Ph.D., Grinstein Class of 1954 Professor of Environmental Chemistry

Graeme P. Berlyn, Ph.D., E. H. Harriman Professor of Forest Management; Professor of Anatomy and Physiology of Trees; and Editor, *Journal of Sustainable Forestry*

Mark A. Bradford, Ph.D., Professor of Soils and Ecosystem Ecology (on leave, spring 2023)

Craig R. Brodersen, M.S., Ph.D., Professor of Plant Physiological Ecology; and Professor of Ecology and Evolutionary Biology

Marian R. Chertow, M.P.P.M., Ph.D., Professor of Industrial Environmental Management; Professor, School of Management; Director, Program on Solid Waste Policy; and Director, Center for Industrial Ecology

Liza S. Comita, M.A., Ph.D., Professor of Tropical Forest Ecology; and Professor of Ecology and Evolutionary Biology; Co-Director, Yale Center for Natural Carbon Capture

Michael R. Dove, M.A., Ph.D., Margaret K. Musser Professor of Social Ecology; Professor of Anthropology; Curator of Anthropology, Peabody Museum of Natural History; and Coordinator, YSE/Anthropology Degree Program

Daniel C. Esty, M.A., J.D., Hillhouse Professor of Environmental Law and Policy; Clinical Professor, Law School; Professor, School of Management; Professor in the Institution for Social and Policy Studies; and Director, Yale Center for Environmental Law and Policy (on leave, 2022-2023 Academic Year)

Justin Farrell, M.Div., Ph.D., Professor of Sociology; and Professor in the Institution for Social and Policy Studies and Department of Sociology

Eli Fenichel, M.S., Ph.D., Knobloch Family Professor of Natural Resource Economics (on leave, 2022-2023 Academic Year)

Kenneth T. Gillingham, Ph.D., Professor of Environmental and Energy Economics; and Professor, School of Management and Department of Economics

Timothy G. Gregoire, Ph.D., J.P. Weyerhaeuser, Jr. Professor of Forest Management

Matthew J. Kotchen, Ph.D., Professor of Economics; Professor, School of Management (on leave, spring 2023)

William Lauenroth, Ph.D., Professor of the Environment

Xuhui Lee, M.Sc., Ph.D., Sara Shallenberger Brown Professor of Meteorology; and Director, Yale Center for Earth Observation (on leave, fall 2022)

- Robert O. Mendelsohn, Ph.D., Edwin Weyerhaeuser Davis Professor of Forest Policy; Professor of Economics; and Professor, School of Management (on leave, spring 2023)
- Peter A. Raymond, Ph.D., Professor of Ecosystem Ecology; and Professor of Geology and Geophysics; Senior Associate Dean of Research; and Director of Doctoral Studies
- James E. Saiers, M.S., Ph.D., Clifton R. Musser Professor of Hydrology; and Professor of Earth and Planetary Sciences
- Oswald J. Schmitz, M.Sc., Ph.D., Oastler Professor of Population and Community Ecology; Professor of Ecology and Evolutionary Biology
- Karen Seto, Ph.D., Frederick C. Hixon Professor of Geography and Urbanization Science; and Director, Hixon Center for Urban Ecology (on leave, spring 2023)
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- Dorceta E. Taylor, M.F.S., Ph.D., Professor of Environmental Justice; Senior Associate Dean of Diversity, Equity, and Inclusion (on leave, spring 2023)
- Gerald Torres, LL.M., J.D., Professor of Environmental Justice (on leave, fall 2022)
- John P. Wargo, Ph.D., Tweedy/Ordway Professor of Environmental Health and Politics; and Chair, Yale College Environmental Studies Major and Program
- Julie B. Zimmerman, Ph.D., Professor of Green Engineering; Professor of Environmental Engineering; Senior Associate Dean of Academic Affairs; and Deputy Director, Center for Green Chemistry and Green Engineering

FACULTY EMERITI

- William R. Burch, Jr., M.S., Ph.D., Frederick C. Hixon Professor Emeritus of Natural Resource Management; and Senior Research Scientist
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- Thomas E. Graedel, M.A., M.S., Ph.D., Clifton R. Musser Professor Emeritus of Industrial Ecology; and Senior Research Scientist
- Chadwick Dearing Oliver, M.F.S., Ph.D., Pinchot Professor Emeritus of the Environment
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- Narasimha Rao, M.S., Ph.D., Associate Professor of Energy Systems (on leave, spring 2023)
- Luke Sanford, Ph.D., Assistant Professor of Environmental Policy and Governance (on leave, spring 2023)
- Yuan Yao, Ph.D., Assistant Professor of Industrial Ecology and Sustainable Systems (on leave, fall 2022)

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John Grim, Ph.D., Senior Lecturer and Senior Research Scholar in Religion and Ecology; Senior Research Scholar, Divinity School; Senior Lecturer in Religious Studies; and Coordinator, Forum on Religion and Ecology

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Jonathan D. Reuning-Scherer, Ph.D., Senior Lecturer in Statistics and Data Science

Mary Evelyn Tucker, Ph.D., Senior Lecturer and Senior Research Scholar in Religion and Ecology; Senior Research Scholar, Divinity School; Senior Lecturer in Religious Studies; and Coordinator, Forum on Religion and Ecology

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Coordinator
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Jennifer Sabol, Budget Analyst, Business Office
Matthias G. Schildwachter, Associate Director of Academic Affairs
Pamela Sheppard, Account Manager, Business Office
Fran Silverman, Associate Director of Communications
Michael Slattery, Web Developer, Communications
Sara Smiley Smith, Associate Dean, Academic Affairs, Research and Sustainability
Paige Stein, Executive Director of Strategic Communications
Rosanne Stoddard, Registrar
Ken'Nia Threatt, Administrative Assistant, Business Office
Rebecca Tulin, Associate Director, Major Gifts and Alumni, Office of Development and
Alumni Affairs
Cristina Angela Violano, Administrative Assistant, Student Affairs
William Walker, Computer/Media Technician, Information Technology
Pamela Welch, Associate Director, Financial Aid
Timothy White, Account Manager, Business Office
Mia Wilson, M.S.W., Mental Health Provider
Kira Wishart, Senior Administrative Assistant, Human Resources and Payroll

A MESSAGE FROM THE DEAN

Since its founding in 1900, our School has been at the forefront of environmental and forest science and scholarship, training generations of leaders who have tackled the challenges of their time. Today, we continue to build on this rich legacy by providing research, teaching, and public engagement aimed at creating a more equitable and sustainable world.

Our faculty, students, and alumni are working on a wide scope of urgent and important issues: climate change, clean energy policy, ecosystem science and biogeochemistry, hydrology, urban science, green chemistry, and environmental justice, among many others. Our alumni – who today number more than 5,500 – are tackling the increasingly complex environmental, social, and economic challenges of the twenty-first century in all corners of the world. They work in NGOs, government, business, academia, law, public health, and communications, among other sectors. They also maintain vital connections to the School, with our alumni network providing valuable mentorship and support to our students as they prepare for their own professional challenges.

In July of 2022, we were thrilled to announce the launch the Three Cairns Climate Program for the Global South, a transformative program aimed at supporting the next generation of environmental leaders. Made possible by the largest gift in the School's history, the program will support the Three Cairns Scholars, allowing YSE to meet 100 percent of the demonstrated tuition need for YSE master's students from the Global South admitted through this program, and the Three Cairns Fellows, enabling YSE to expand access to its highly regarded online certificate programs for mid-career environmental professionals in the Global South. The gift also will support the development of new certificates relevant to environmental issues pertaining to the Global South. This program will strengthen the School's position as a leader in global climate action and further enrich the YSE community by welcoming unique knowledge, perspectives, and lived experiences.

The teaching and study of forestry has been, and remains, a core strength of our School since its founding. The Forest School at YSE is a hub for practitioners and land stewards in forest-related fields worldwide, bringing together cross-disciplinary research in science and practice to find solutions to the challenges that face the world's forests. The Forest School teaches all of our students the principles of natural resource management through the innovative research and sustainable practice occurring at our nearly 11,000 acres of actively managed forests.

In 2021, two new professors joined the YSE faculty: Assistant Professor Luke Sanford, whose research examines environmental stewardship from a political science perspective, and Associate Professor Nyeema Harris, a wildlife ecologist. These incredible scholars are emerging leaders in their fields and are enriching the academic experience at our School and across Yale. They joined a sterling group of teachers and scholars that includes the likes of Karen Seto, an expert in urbanization, who this year was a coordinating author on the latest Intergovernmental Panel on Climate Change report and was elected to the American Academy of Arts & Sciences.

Last year, the School also formalized a partnership with the Central Park Conservancy and the New York City-based Natural Areas Conservancy, creating a new initiative to study the on-the-ground impacts of climate change on urban parks. The end goal of the Central Park Climate Lab is to work with cities across the United States to advance and implement urban park strategies to mitigate and adapt to climate change and understand how these essential greenspaces could be used to create more resilient futures.

Since its founding, this School has demonstrated the willingness and strength to adapt to the evolving challenges facing our world. I have never felt more confident about how well poised we are to fulfill our mission of providing knowledge and leadership for a sustainable future. The work that we do here is vital to meeting the many global environmental challenges we are currently facing and will face in the future.

Ingrid C. “Indy” Burke
Carl W. Knobloch, Jr. Dean
School of the Environment

SCHOOL MISSION

The Yale School of the Environment aspires to lead the world toward a sustainable future with cutting-edge research, teaching, and public engagement on society's evolving and urgent environmental challenges.

Our mission is grounded in seven fundamental values:

Excellence We promote and engage in pathbreaking science, policy, and business models that build on a fundamental commitment to analytic rigor, data, intellectual integrity, and excellence.

Leadership We attract outstanding students nationally and internationally and offer a pioneering curriculum that imparts the knowledge and skills needed to be a twenty-first-century environmental leader in a range of professions.

Sustainability We generate knowledge that will advance thinking and understanding across the various dimensions of sustainability.

Community We offer a community that finds strength in its collegiality, diversity, independence, and commitment to excellence and lifelong learning.

Diversity We celebrate our differences and identify pathways to a sustainable future that respects diverse values including equity, liberty, and civil discourse.

Collaboration We foster collaborative learning, professional skill development, and problem solving—and we strengthen our scholarship, teaching, policy work, and outreach through partnerships across the University and beyond.

Responsibility We encourage environmental stewardship and responsible behavior on campus and beyond.

In pursuit of our mission, we:

- Build on more than a century of work bringing science-based strategies, ethical considerations, and conservation practices to natural resource management.
- Utilize systems thinking and approach problems from interdisciplinary perspectives.
- Integrate theory and practice—and provide innovative solutions to society's most pressing environmental problems.
- Address environmental challenges at multiple scales from local to global and multiple settings from urban to rural and from managed to wild—including working lands and landscapes.
- Draw on the depth of resources at Yale and its network of alumni that extends across the world.
- Create opportunities for research and policy application as well as professional development through a structure of faculty-led centers and programs.
- Provide a neutral forum to convene conversations on difficult issues that are critical to progress on sustainability.

- Bring heightened focus to the most significant threats to a sustainable future, including climate change, the corresponding need for clean energy, and the increasing stresses on our natural resources.

HISTORY OF THE SCHOOL OF THE ENVIRONMENT

The School was established in 1900 as “The Yale Forest School” with a founding gift from the family of Gifford Pinchot, B.A. 1889, LL.D. 1925, a pioneer in the conservation movement who would later become the first head of the U.S. Forest Service. Through Pinchot’s vision and the work of the Forest School, Yale led the way in creating a new model of forest management and natural resource conservation, educating many of the nation’s first foresters—a vanguard of professionals who shaped our modern understanding of conservation, environmental education, and public lands. In fact, during its first four decades, the School would produce the first four U.S. Forest Service chiefs.

Over the past century, the School has grown from a more narrowly focused forestry program to an international institution with a diverse array of students from across the world graduating each year. In 1972, in recognition of its increased scope, the School changed its name to the Yale School of Forestry & Environmental Studies.

Then, on July 1, 2020, the School again changed its name to the Yale School of the Environment (YSE) to better reflect its established role as a leader in environmental scholarship and practice.

At the same time, the School established the Forest School at the Yale School of the Environment in recognition of its founding mission and because the teaching and study of forestry and forest science remain a core strength of the School. YSE students learn the principles of natural resource management through the innovative research and sustainable practice occurring at the School’s nearly 11,000 acres of actively managed forests, and YSE is committed to providing students multiple opportunities to study these forests and those around the world.

In addition to forest science and management, research and teaching at Yale School of the Environment now cover a broad range of other areas: ecology, ecosystems, and biodiversity; environmental management and social ecology in developing societies; global change science and policy; health and environment; industrial environmental management; policy, economics, and law; urban science, environmental planning, design, and values; coastal watershed systems; and environmental justice.

The School has more than 5,300 living alumni who are working across the world on a range of environmental challenges. They work in NGOs, government, business, academia, law, public health, and communications, among numerous other sectors and disciplines.

Over the past two decades, the School has strengthened its connections within the wider Yale community and with external partners. The School has introduced joint programs with Yale Law School and with the Yale Schools of Engineering & Applied Science, Management, Public Health, and Architecture, as well as with partner universities including Pace Law School, Vermont Law School, and Tsinghua University in China.

During the 1990s, the School established and invested in a range of new centers and programs to expand its work beyond faculty research and classroom learning. The nearly twenty centers and programs, along with other emerging initiatives, have created dynamic foci for scholarship, research, student learning, and outreach to alumni and the wider professional communities on critical issues, such as tropical forestry, environmental communication, and industrial ecology, among many others.

In 2017 the School unveiled an ambitious new Strategic Plan. Among the plan's critical goals was the development of new curricula that track the School's current and evolving strengths; increased programs and hiring to address environmental equity and diversity issues; a new emphasis on research and training in environmental communication; and expanded interdisciplinary research. In the three years since, the School has adopted a new curriculum for the Master of Environmental Management program, which places more emphasis on subject specialization while maintaining its signature flexibility; introduced the Yale Center for Environmental Communication; and created the Yale Environmental Dialogue, an initiative that has engaged environmental leaders from a wide range of disciplines and sectors to inject new ideas and fresh energy into the national conversation on environmental policy. The School also is continuing to develop and strengthen strategic initiatives focused on environmental data, urban science, and environmental health and justice.

The School's faculty and students have also become more diverse and representative of the wider world, convening from a range of professional, cultural, and sociological backgrounds. In 2020 the School welcomed to the faculty Dorceta Taylor and Gerald Torres, two of the country's preeminent scholars in the field of environmental justice, and Yuan Yao joined the faculty as an assistant professor of industrial ecology and sustainability systems. This year, Luke Sanford, whose research examines environmental stewardship from a political science perspective, joined the YSE faculty as assistant professor of environmental policy and governance. His skills in using empirical and statistical data strengthen the School's emphasis on using environmental data science in all areas of focus.

A \$100 million gift to Yale from FedEx is helping to support a new Center for Natural Carbon Capture, which will focus on developing natural solutions for reducing atmospheric carbon. The center, a key aspect of Yale's broader Planetary Solutions Project, will support and accelerate research across academic disciplines. The FedEx funding will also help support the creation of two new professorships as well as doctoral and postdoctoral fellowships at YSE. The Environmental Leadership and Training Initiative (ELTI) will also receive support through this gift. Housed within the Forest School, ELTI supports the efforts of people to design and implement an array of land use practices and initiatives that conserve and restore tropical forests and native tree cover.

"At a time of global crisis for the planet," says Indy Burke, Carl W. Knobloch, Jr. Dean, "our faculty, students, and alumni are working with colleagues throughout Yale on a wide scope of urgent and important issues – issues that include climate change, clean energy policy, urban science, green chemistry, forestry, and environmental justice, among many others."

LEADERSHIP FOR SUSTAINABILITY

Through its scholarship, teaching, practice, and power to convene, the Yale School of the Environment (YSE) is a leader in the development and implementation of sustainable practices locally and globally. The School creates new knowledge in the science of sustainability and new methods of applying that knowledge to environmental management and sustainable development, including the restoration of degraded environments.

On the Yale campus, the School has stepped up as a model in the sustainable use of resources and materials and has helped develop strategies and programs to achieve sustainability goals campuswide. In 2016, Yale committed to becoming carbon neutral by 2050. The University formed a task force to review and propose ambitious goals for reducing emissions, with a specific charge to explore how Yale could achieve net-zero carbon emissions. YSE's Kroon Hall is the most energy-efficient building on campus. The Yale Carbon Charge, an initiative born in a YSE classroom and developed in part by YSE faculty and students, has grown into a first-of-its-kind campuswide effort to reduce energy use through the use of internal carbon pricing.

In 2019, the University created a new multidisciplinary laboratory, the Yale University Carbon Containment Lab, which is developing and supporting innovative, scalable solutions to the climate challenge. And Yale's new Center for Natural Carbon Capture, recently established with a \$100 million grant from FedEx, will focus on developing interventions that enhance the Earth's natural abilities to store carbon through biological and geological processes, and other methods that model natural processes. The interdisciplinary center is part of the University's broader Planetary Solutions Project.

Since its inception, the School has been working on the sustainable management of forests across the world – for biological diversity, for natural resource production, and, most recently, for carbon storage. For more than twenty years, the YSE-based Urban Resources Initiative (URI) has promoted community-based land stewardship, urban forestry, and green job training in the city of New Haven. Each year, YSE students and faculty work with landowners in northeastern Connecticut to promote sustainable forestry practices as part of the Quiet Corner Initiative. Many YSE students work as research assistants at the Yale Office of Sustainability, on projects ranging from sustainable materials management to climate resilience, all of which directly support the University's Sustainability Plan 2025.

For students, classroom learning often extends into local communities, where students have helped officials with climate resilience and adaptation strategies, green infrastructure development, and sustainable land stewardship and resource management plans. Their work has addressed a sweeping array of complex environmental challenges from dealing with lead-contaminated water in Flint, Michigan, to endangered species conservation in China. Our alumni also continue this commitment to sustainability in all its forms through their leadership in ongoing academic research, major corporate initiatives, government programs, and the nonprofit sector.

MASTER'S DEGREE PROGRAMS

Two-Year Master's Degree Programs

The School of the Environment offers four two-year master's degrees: the professionally oriented Master of Environmental Management (M.E.M.) and the Master of Forestry (M.F.), and the research-oriented Master of Environmental Science (M.E.Sc.) and Master of Forest Science (M.F.S.). The M.F. and M.F.S. programs are administered within the Yale Forest School. All the master's degree programs vary in their level of prescription, but all are sufficiently flexible to accommodate the diverse academic backgrounds, professional experiences, and career aspirations of a large and vibrant student body. The program curricula draw from more than 200 courses taught by more than fifty YSE faculty, as well as from courses taught elsewhere at Yale. Each student's course of study is customized through consultation with a faculty adviser who guides the student's learning experience from the first week at Yale until graduation. The master's degree programs require a minimum of two years in residence, 48 credits of course work at Yale, a summer internship or research experience, and completion of the Training Modules in Technical Skills prior to the student's first term (see below).

MASTER OF ENVIRONMENTAL MANAGEMENT

The Master of Environmental Management curriculum draws from course work in the natural and social sciences and focuses on the complex relationships among science, management, and policy. The purpose of the program is to provide students with an in-depth understanding of natural and social systems that can be applied to environmental and natural resource problem solving in a policy or management context. In addition to course work, students are expected to hone their capacities as leaders and managers through summer internships, professional skills courses, and other opportunities.

The M.E.M. curriculum requires students to focus on an area of specialization, while still offering the flexibility to tailor their course programming in a way that exposes them to other disciplines and subject areas. This structure assures that students develop both depth and breadth in their course study. Students can choose from more than 100 courses offered by YSE faculty and have access to an even larger number of courses from across Yale University. All M.E.M. students take the fall Perspectives course (ENV 553), demonstrate interdisciplinary conversancy through either taking or satisfying waiver requirements for four 1.5-credit Foundational Knowledge courses (ENV 511, ENV 512, ENV 521, and ENV 522), and complete a Capstone course or project. They round out their experience with general electives and a selection of at least four of eight Professional Skills Modules.

Specializations are designed to ensure that students obtain sufficient depth in their chosen area of study. The specializations are:

1. Business and the Environment
2. Climate Change Science and Solutions
3. Ecosystem Management and Conservation
4. Energy and the Environment

5. Environmental Policy Analysis
6. Industrial Ecology and Green Chemistry
7. People, Equity, and the Environment
8. Urban
9. Water Resource Science and Management

Specialization requirements account for 18 of the 48 total credits required for the M.E.M. degree, made up of two core courses and four electives, and it is possible to add a second specialization. Students will be asked to choose their specialization at the end of their first term of study, and this specialization will be listed on their transcript upon completion. Students may also propose a self-designed specialization path in collaboration with a faculty adviser and the senior associate dean of academic affairs.

MASTER OF FORESTRY

The Master of Forestry program trains professionals for the protection, management, and restoration of native forests and woodlands and associated human-made forest ecosystems (urban trees, agroforests, plantations); and for mediating and resolving the conflicting values of society that concern forests and associated ecosystems. Since 1900, the Master of Forestry program has provided leadership in the education of professional foresters. It is the oldest continuing forestry program in the Western Hemisphere. Almost all the early foresters in North America had their roots at Yale, including Aldo Leopold, M.F. 1909, and nine of the first twelve chiefs of the USDA Forest Service.

Master of Forestry graduates have pursued a variety of professional opportunities in forestry. Most start as general practitioners in management and with experience move through management to become policy makers and organizers. Some graduates use the degree as preparation for advanced study in doctoral programs.

The broad objective of the two-year M.F. program is realized by requiring a multidisciplinary suite of formal course work coupled with a progressive synthesis of knowledge in a significant project. Course work is supplemented through an array of local, regional, national, and international field trips to witness the practice of forestry in diverse settings. Real-world professional experience is provided through the Yale Forest and summer internships at a wide variety of resource management and policy organizations. Opportunities to engage in discussion with forest leaders are provided through workshops, meetings with visiting speakers of national and international repute, and involvement in the School's programs such as the Yale Forest Forum, the Forests Dialogue, the Tropical Resources Institute, and the Urban Resources Initiative.

The teaching objectives of the M.F. program are (1) to integrate knowledge about forests, natural resources, and society to form a sound basis for making management decisions; (2) to provide electives and other educational opportunities to specialize by focusing on a particular land use or management issue concerning forest ecosystem management; and (3) to provide opportunities for independent problem solving, critical thinking, and self-development. Students take a mixture of natural, social, and quantitative science courses, culminating in the second year with courses in integrated resource management and leadership. Flexibility in the choice of courses within the core curriculum as well as choice of electives allows each student to tailor the program to a desired specialization. Sample specializations have included community development

and social forestry; protected areas management; extension and education; consulting forestry; business; watershed health and restoration; tropical forest management; agroforestry; and industrial forest management.

The Master of Forestry degree is accredited by the Society of American Foresters (SAF). A minimum of two full years in residence and sixteen full courses (48 credits) is required for completion of this program.

MASTER OF ENVIRONMENTAL SCIENCE/MASTER OF FOREST SCIENCE

The Master of Environmental Science and the Master of Forest Science degree programs are expressly designed for students wishing to conduct research that contributes to basic and applied knowledge in any of the fields taught at YSE, such as ecology, hydrology, social ecology, economics, industrial ecology, or policy. These degrees are intended to facilitate a deeper disciplinary focus than the Management degrees, while allowing students the flexibility in course election that will allow them to meet diverse educational goals. The Master of Environmental Science is intended for students who wish to work broadly in different fields of environmental science. The Master of Forest Science is intended for students who wish to work in forest-related topics.

The course of study for both degrees includes formalized School-level training in the philosophy and practice of science. Training is provided through key courses in combination with extended project research and disciplinary and nondisciplinary electives. The scientific research required for this degree will be conducted in close collaboration with a YSE faculty adviser. *Therefore students must have a commitment from a faculty adviser before being admitted to these degree programs.* The Master of Environmental Science and Master of Forest Science programs require the student to produce a “scholarly product.” This product may take the form of a traditional master’s thesis or a paper(s) submitted to a refereed journal.

TRAINING MODULES IN TECHNICAL SKILLS (MODS)

All incoming master’s students participate in MODS, shorthand for Field Modules, which introduce the students to a basic understanding of field data, the basis for all environmental science and policy. MODS will take place during August of 2022, with students rotating between different modules over the course of three weeks. MODS plans may be adjusted if pandemic conditions change public health guidance. Participating in MODS is a graduation requirement and an important opportunity to engage with classmates and build relationships.

One-Year Midcareer Master’s Degree Program

The midcareer M.F. (Master of Forestry), which is not accepting applicants at this time, is a degree program intended to permit forest managers to build on their work experience in order to acquire skills that will enable them to pursue their career goals more effectively. To this end, those admitted into the program must have at least seven years of directly relevant professional experience in forestry that is sufficient to provide a corpus of experiential learning equivalent to one year of academic study at YSE. Applicants must detail their career work experience so that the admissions committee

may fairly judge each applicant's work record in light of this requirement. Relevant work experience is not the sole criterion for admission into this degree program; the breadth of prior academic training is also considered, and those applicants who are better prepared (see Preparation for Admission, in the chapter Admissions: Master's Degree Programs) are more likely to succeed in this competitive admission process.

The midcareer degree program is not appropriate for those seeking to make an abrupt career change, nor is it suitable for those who have acquired seven or more years of work experience that is tangentially related to forest management. Normally, voluntary service will not be considered equivalent to career experience needed for acceptance into this degree program.

The curricula for the one-year midcareer Master of Forestry degree program is less structured than the curricula for the two-year programs. Attendance at the Training Modules (see Training Modules in Technical Skills, above) is expected, and the successful completion of 30 credits of course work and independent study is required. One academic year in residence is normally expected, as is initial enrollment at the start of the fall term.

Five-Year Program for Yale College and Yale-NUS College Students

The School of the Environment offers joint-degree, five-year options that culminate in a baccalaureate and master's degree intended for students who want to pursue careers in an environmental field. The joint-degree option is available to all undergraduates in Yale College and to environmental studies majors at Yale-NUS College. The program provides well-prepared students with accelerated graduate training in environmental science, management, and policy. Eligible students may apply for either a Master of Environmental Management (M.E.M.) or Master of Environmental Science (M.E.Sc.) degree. The program is built on careful integration of a student's undergraduate curriculum with graduate requirements. Graduates have become highly successful leaders within governments, corporations, nonprofit organizations, and academia.

Yale students interested in the five-year joint-degree program should apply to the program at the end of the fall term of their senior year, or in the two years immediately following graduation. Applicants interested in applying to the M.E.Sc. should make an appointment to talk to the YSE Office of Admissions at admissions.yse@yale.edu prior to applying.

Joint Master's Degree Programs

The School of the Environment supports several curricula that work concurrently toward two degrees from different academic units of Yale University. Opportunities for development of joint-degree programs exist with the School of Architecture, Divinity School, Law School, School of Management, School of Public Health, School of Engineering & Applied Science, Jackson School of Global Affairs, the International and Development Economics program of the Graduate School's Department of Economics, and three programs offered by the Graduate School and coordinated through the MacMillan Center (African Studies, East Asian Studies, and European and Russian Studies). Joint-degree programs with Pace Law School and Vermont Law School

constitute additional options. Applicants are urged to apply to both units at the same time. All of these programs are subject to the following general guidelines.

Applicants must apply to, and be accepted by, both units of the University according to normal admissions procedures. A minimum of one and one-half years (three terms) and 36 credits is required at the School of the Environment. For successful integration of the two programs, it is recommended that students spend a complete academic year (two terms) at one school, the following academic year at the other school, and then split the final year between the two schools.

Upon successful completion of the formal joint-degree program, the student will be awarded one of the four YSE master's degrees, together with the joint degree. The joint-degree programs, sponsoring Yale academic units, and associated residency requirements (which are in addition to the three-term requirement of YSE) are as follows:

1. School of Architecture: Master of Architecture I (five terms); Master of Architecture II (three terms).
2. Divinity School: Master of Arts in Religion (three terms); Master of Divinity (five terms).
3. Schools of law (Yale Law School, Pace Law School, and Vermont Law School): Juris Doctor (five terms).
4. School of Management: Master of Business Administration (three terms).
5. School of Public Health: Master of Public Health (three terms).
6. School of Engineering & Applied Science (Graduate School of Arts and Sciences): Master of Science (two terms).
7. Jackson School of Global Affairs: Master of Arts (three terms).
8. Department of Economics, International Development and Economics program (Graduate School of Arts and Sciences): Master of Arts (two to three terms).
9. African Studies (Graduate School of Arts and Sciences): Master of Arts (three terms).
10. East Asian Studies (Graduate School of Arts and Sciences): Master of Arts (three terms).
11. European and Russian Studies (Graduate School of Arts and Sciences): Master of Arts (three terms).

To view specific requirements for each joint-degree program, visit <https://environment.yale.edu/academics/masters/joint-degrees>. For additional questions about these joint-degree programs, please contact the YSE Office of Admissions at info.yse@yale.edu or 800.825.0330.

JOINT-DEGREE PROGRAM WITH TSINGHUA UNIVERSITY

YSE offers a three-year joint-degree program with Tsinghua University School of Environment in China. This program consists of one and one-half years (three terms) at Tsinghua working toward a Master of Environmental Engineering and one and one-half years (three terms) at Yale working toward a Master of Environmental Management, Master of Environmental Science, Master of Forestry, or Master of Forest Science. Students who begin their program at YSE will spend one year (two terms) at

YSE, followed by one and one-half years (three terms) at Tsinghua, and then conclude their program with one-half year (one term) at YSE. Students who begin their program at Tsinghua will spend one year (two terms) at Tsinghua, one and one-half years (three terms) at YSE, and then conclude their program with one-half year (one term) at Tsinghua.

Applicants must apply to, and be accepted by, both YSE and Tsinghua University under normal admissions procedures. For questions about this joint-degree program, please contact the YSE Office of Admissions at info.yse@yale.edu or 800.825.0330.

Part-Time Program

Students who wish to obtain a degree through the part-time option must complete the same curriculum as full-time students. Students must complete two part-time terms to equal a full-time term regardless of meeting credit requirements. Students must enroll for at least two courses per term and must complete the degree requirements within four years of matriculation. Part-time tuition will be \$11,900 per term for the academic year 2022–2023. (Mid-career students should contact the Admissions Office for part-time tuition rates.)

Special Students

For those who do not wish to pursue a degree program, YSE offers the option of special-student status. Special students may be registered for a period as short as one term and may enroll in a minimum of one course or elect to take a full load of four courses per term. Please note that international applicants who are not coming through a preestablished Memorandum of Understanding between a partner university and Yale University will likely not be able to participate in the special-student program. Special students may not be eligible to participate in the summer Training Modules in Technical Skills. Under normal circumstances, no one may hold special-student status for more than one academic year. No degree or certificate is granted for special-student course work. Students will receive official transcripts of course work completed. For information on tuition for special students, see the chapter Tuition, Fees, and Other Expenses.

Special students wishing to matriculate in a degree program after completing courses will need to apply and be admitted through the YSE admission process described in the chapter Admissions: Master's Degree Programs. Course credits earned while in special-student status will not be applied toward any degree credit requirements, and any fees paid while in attendance as a special student will not be applied toward degree tuition requirements.

DOCTORAL DEGREE PROGRAM

The Doctor of Philosophy (Ph.D.) degree is conferred through the Yale Graduate School of Arts and Sciences. Work toward this doctoral degree is directed by the Environment department of the Graduate School, which is composed of the faculty of the School of the Environment. Doctoral work is concentrated in areas of faculty research, which currently encompass the following broad foci: agroforestry; biodiversity conservation; biostatistics and biometry; climate science; community ecology; ecosystems ecology; ecosystems management; energy and the environment; environmental and resource policy; environmental anthropology; environmental biophysics and meteorology; environmental chemistry; environmental ethics; environmental governance; environmental health risk assessment; environmental history; environmental law and politics; environmental management and social ecology in developing countries; forest ecology; green chemistry and engineering; hydrology; industrial ecology; industrial environmental management; plant physiology and anatomy; pollution management; population ecology; resource economics; silviculture; social ecology; stand development, tropical ecology, and conservation; sustainable development; urban ecology; urban geography; urban land cover change; urban planning; and water resource management.

REQUIREMENTS FOR THE DOCTORAL DEGREE

All courses listed in this bulletin are open to students working toward the doctoral degree. Additional courses are available in other departments – e.g., Anthropology; Chemistry; Earth and Planetary Sciences; Ecology and Evolutionary Biology; Economics; Management; Mathematics; Molecular, Cellular, and Developmental Biology; Political Science; Sociology; and Statistics and Data Science – and are listed in the bulletin of the Graduate School.

A doctoral committee will be appointed for each student no later than the student's second term in the program. The committee consists of a minimum of two faculty members from the Yale University community. When appropriate for their research areas, students are encouraged to suggest committee members from other universities or institutions. Doctoral students work under the supervision of their doctoral committees. The committee should be chaired or co-chaired by a YSE ladder faculty member.

Students are required to take the Doctoral Student Seminar (ENV 900) during the first year of their program.

Two Honors grades must be achieved before a student is eligible to sit for the qualifying examination. In addition, students are expected to serve four terms (10 hours per week) as teaching fellows, in partial fulfillment of their doctoral training.

A written and oral qualifying examination is required upon completion of the course requirements. Students are expected to take the examination by the end of their second year, although this can be extended to the third year in cases with appropriate extenuating circumstances. At the time of the qualifying examination, the student must present a prospectus of the research work proposed for the dissertation. Successful

completion of the qualifying examination and submission of the prospectus will result in admission to candidacy.

The director of doctoral studies (DDS) of the School serves as director of graduate studies for the Environment department of the Graduate School, administers the doctoral program, and may be consulted if questions arise.

Before beginning work, the student must secure approval from the student's committee and the DDS for a proposed program of study and for the general plan of the dissertation. Appropriate advanced work is required. Courses chosen should form a coherent plan of study and should support research work for the proposed dissertation.

The dissertation should demonstrate the student's mastery of the chosen field of study as well as the ability to do independent scholarly work and to formulate conclusions that may modify or enlarge previous knowledge.

Candidates must present themselves for the oral defense of the dissertation at such time and place as the student, the DDS, and the committee determine. Upon completion of the dissertation, the candidate must make unbound copies of the dissertation available to the faculty. Copies of the approved dissertation must be submitted to the Graduate School.

COMBINED DOCTORAL DEGREE

Department of Anthropology

The School of the Environment offers a combined doctoral degree with Yale's Department of Anthropology. The purpose of the degree is threefold: it combines (1) the disciplinary identity and strengths of the Anthropology department with the interdisciplinary character and possibilities of YSE, especially in terms of bridging the social and natural sciences; (2) the strengths in ecological and environmental studies of YSE with the social science strengths of the Anthropology department; and (3) the Anthropology department's strengths in theory with the emphasis within YSE on linking theory with policy and practice. The combined doctoral degree offers its graduates great flexibility when entering the marketplace. They can represent themselves as anthropologists and/or environmental scientists, as theoreticians and/or practitioners. They have the credentials to apply for policy-oriented positions with international institutions, as well as academic positions in teaching and research. The academic program of each student in the combined-degree program is to some extent tailored specifically to that student's particular history, interests, and needs, but all combined-degree students are expected to follow the program's general guidelines.

Prospective combined-degree students must initially apply either to Anthropology or to the doctoral program in Environment (not both) and check the combined-degree box on the application form. Students should communicate with faculty in both programs during the year prior to application, and they should apply to the program where their credentials and faculty contacts offer the greatest chance of admission. The program is extremely competitive, accepting one or two students per year out of dozens who apply. (Note: most successful applicants to YSE hold a prior master's degree.)

Once a student is accepted in either Environment or Anthropology, the application file is sent to the second department for consideration. A positive decision at this point

amounts to acceptance into the combined-degree program. (A negative decision, which is rare in any case, does not affect the student's prior admission into the first program.) Students admitted into the combined-degree program will be allocated to the department to which they initially applied as their primary administrative home, but they will enter Yale as members of the combined-degree program. A student who does not apply to the combined-degree program at the time of their initial application to Yale may still apply after matriculating at Yale, but this should be done as soon as possible in their first term on campus.

Detailed guidelines for the combined-degree program can be found on the YSE website at <http://environment.yale.edu/doctoral/degrees/combined-anthropology>. The program coordinators are Michael Dove (YSE) and Kalyanakrishnan Sivaramakrishnan (Anthropology).

New York Botanical Garden

The School of the Environment offers a combined doctoral degree with the New York Botanical Garden, which is funded by the Lewis B. Cullman Fellowship. The objective is to train biological scientists to use an interdisciplinary approach to solving problems associated with tropical environments.

Areas of study include agroforestry and forest management, ecosystem analysis, economic botany, economic evaluation of tropical resources, ethnobotany, plant biodiversity and conservation, social processes affecting management of natural resources, tropical field studies, and tropical silviculture.

For more information about the combined doctoral degree, please contact the director of doctoral studies at 203.432.5146.

SUBJECTS OF INSTRUCTION

Courses offered by the School of the Environment are described below. The letters “a” and “b” following the course numbers indicate fall- and spring-term courses, respectively. Courses with bracketed titles will not be offered during the 2022–2023 academic year.

Project courses involve individually assigned advanced field or laboratory work, or literature review, on topics of special interest to the student; credits and hours for these projects are determined for each student in consultation with the instructor.

Courses throughout the University are generally open to students enrolled in the School of the Environment, subject to limitations on class size and requirements for prerequisites.

COURSE DESCRIPTIONS

At YSE, new courses are often added after this bulletin is printed. Please visit our website at <https://resources.environment.yale.edu/courses>, it will have an updated list. See also Yale Course Search at <https://courses.yale.edu> for many other environmental courses in other Yale departments.

ENV 511a, Ecological Foundations for Environmental Managers

This course gives students a fundamental mechanistic understanding about the way abiotic (e.g., climate) and biotic (e.g., resources, competitors, predators) factors determine pattern in the distribution and abundance of species. Students learn how individuals within a species cope with changing environmental conditions by altering their behavior, making physiological adjustments, and changing the allocation of resources among survival, growth, and reproduction. Students learn how populations of species coexist within communities and how species interactions within communities can drive ecosystem functioning. Students also learn how ecologists use scientific insight to deal with emerging environmental problems such as protecting biodiversity, understanding the consequences of habitat loss on species diversity, and forecasting the effects of global climate change on species population viability and geographic distribution. 1½ Course cr

ENV 512a, Microeconomic Foundations for Environmental Managers

This six-week course provides an introduction to microeconomic analysis and its application to environmental policy. Students study how markets work to allocate scarce resources. This includes consideration of how individuals and firms make decisions, and how policy analysts seek to quantify the benefits and costs of consumption and production. We consider the conditions under which markets are beneficial to society and when they fail. We see that market failure arises frequently in the context of environmental and natural resource management. The last part of the course focuses on the design of environmental and natural resource policies to address such market failures. The course is designed to cover basic knowledge of economics analysis and prepare students for ENV 834 and other more advanced offerings. 1½ Course cr

ENV 521a, Physical Science Foundations for Environmental Managers

This required foundational course provides students with the physical science basics that they need to understand and manage environmental problems. The course draws on climatology, environmental chemistry, geology, hydrology, meteorology, oceanography, and soil science. Focus is on understanding both the underlying concepts and how they apply to real-world environmental challenges. Useful both as a freestanding course and as a gateway to a wide spectrum of intermediate and advanced courses. 1½ Course cr

ENV 522a, Social Science Foundations for Environmental Managers

The environmental social sciences shed light on how humans define, perceive, understand, manage, and otherwise influence the environment. Insights into the cultural, institutional, political-economic, and historic drivers of human actions are needed to describe and understand human-environment interactions as well as to move toward long-lasting and flexible responses to socio-environmental change. This basic knowledge course is designed to introduce students to a range of social science disciplines that are engaged in understanding the relationships between nature and society. Explicit focus is on how to mobilize the insights gained from environmental social sciences for natural resource management. 1½ Course cr

ENV 550a, Natural Science Research Methods

The course prepares students to design and execute an intensive research project. It covers elementary principles and philosophy of science; research planning, including preparation, criticism, and oral presentation of study plans; communicating research findings; limitations of research techniques; the structure of research organizations; and professional scientific ethics. 3 Course cr

ENV 551a, Qualitative Social Science Research Methods

This course is designed to provide a broad introduction to issues of qualitative research methods and design. The course is intended for both doctoral students who are in the beginning stage of their dissertation research, as well as master's students developing research proposals for their thesis projects with a focus on understanding the nexus of human-environment issues. The course covers the basic techniques of designing qualitative research and for collecting, interpreting, and analyzing qualitative data. We explore three interrelated dimensions of research: theoretical foundations of science and research, specific methods available to researchers for data collection and analysis, and the application and practice of research methods – all with a strong emphasis on the relationship between people and natural resources. The final product for this course is a research proposal. 3 Course cr

ENV 552b, Master Student Research Conf. Peter Raymond

One of the most important aspects of scientific research involves the communication of research findings to the wider scientific community. Therefore, second-year M.E.Sc. and M.F.S. students are required to present the results of their faculty-supervised research as participants in the Master's Student Research Conference, a daylong event held near the end of the spring term. Student contributors participate by delivering a fifteen-minute oral presentation to the YSE faculty and student body or by presenting a research poster in a session open to the YSE community. Students receive a score of satisfactory completion for this effort. 0 Course cr

ENV 553a, Perspectives: Environmental Leadership

The course is intended to offer a common experience and exposure to the variety of perspectives represented by YSE faculty and guest experts on the challenges and opportunities of environmental management. This year's theme is Environmental Leadership, and over the term we create and foster a leadership toolkit and systems-thinking appreciation that enable first-year M.E.M. students to map out and maximize an impactful path through Yale, their careers, and their lives. 3 Course cr

ENV 573a, Urban Ecology for Local and Regional Decision-Making

Urban ecology is the interdisciplinary study of urban and urbanizing systems from local to global scales. While urban ecology shares many features with the biological science of ecology, it emphasizes linkages with social, economic, and physical sciences and the humanities. Geographically, the subject includes central and edge cities, suburbs of various ages and densities, and exurban settlements in which urban lifestyles and economic commitments are dominant. In application, urban ecology can be useful as a social-ecological science for making cities more sustainable, resilient, and equitable. Emerging “grand challenges” in urban ecology include the development of robust approaches to and understanding of (1) integrated social-ecological systems in urban and urbanizing environments; (2) the assembly and function of novel ecological communities and ecosystems under novel environmental conditions; (3) drivers of human well-being in diverse urban areas; (4) pathways for developing healthy, sustainable, and disaster-resilient cities; and (5) co-production of actionable science for policy, planning, design, and management. 3 Course cr

ENV 592a, Documentary Film Workshop Charles Musser

This workshop in audiovisual scholarship explores ways to present research through the moving image. Students work within a Public Humanities framework to make a documentary that draws on their disciplinary fields of study. Designed to fulfill requirements for the M.A. with a concentration in Public Humanities. 3 Course cr

ENV 595a, Yale Environment Review

The *Yale Environment Review* is a student-run publication that aims to increase access to the latest developments in environmental studies. We aim to shed light on cutting-edge environmental research through summaries, analysis, and interviews. During this one-credit course, students produce one or two articles on subjects of their choosing for publication on the *YER* website. Please refer to our website and Canvas for an overview of the different types of content that *YER* produces. Students receive coaching to improve their writing skills, and their work goes through a rigorous editing process. Participation in *Yale Environment Review* helps students sharpen their writing skills and familiarize themselves with science communication, and it provides a platform to showcase their expertise.

ENV 602a, Ecosystems and Landscapes

Concepts and their application in ecosystem and landscape ecology. Topics covered include biogeochemical cycling, food web interactions, biodiversity, and the abiotic and biotic controls that act on them. The course emphasizes how to integrate this knowledge to understand and manage ecosystem budgets. 3 Course cr

ENV 603b, Environmental Data Visualization and Communication Simon Queenborough and Jennifer Marlon

Welcome to the Information Age! It is now much easier to generate and access more data than ever before. Yet, our ability to manage, analyze, understand, and communicate all this data is extremely limited. Visualization is a powerful means of enhancing our abilities to learn from data and to communicate results to others, especially when informed by insights into human behavior and social systems. Developing the quantitative skills necessary for analyzing data is important, but for addressing complex and often urgent environmental problems that involve diverse audiences, understanding how to communicate effectively with data is equally essential for researchers, policy makers, and the public alike. This course is for students who wish to gain an understanding of the principles, tools, and techniques needed to communicate effectively with data. Classes consist of short lectures about principles of design, data preparation, and visual communication; discussions about examples from the news and scientific literature; guest lectures; peer critiques; and hands-on individual and collaborative group activities. Throughout the term, we use Excel, PowerPoint, R, Tableau, and other tools to develop visualizations using diverse datasets. Students also work with a dataset of their own choice or from a partner organization to develop a final project consisting of a poster, infographic, report, dashboard, story map, or related product. Enrollment is limited and application is required. 3 Course cr

ENV 605a, Environmental Risk Communication

Risk communication is a critical but often overlooked part of how organizations identify and manage risks. Effective risk communication can help people understand risks and determine appropriate responses to them. It should help people to take seriously risks they might otherwise ignore (e.g., to get vaccinated or evacuate from a coming hurricane), or to understand that certain activities do not pose significant risks. Effective risk communication enables environmental professionals to communicate information in a way that is understood and accepted by different stakeholders (e.g., the public, industry, government leaders, etc.) and allows the participation of these stakeholders in risk management decisions. This course provides an overview of the theory and practice of effective communication about environmental and health risks to diverse stakeholders. Students are expected to actively participate in class discussions, drawing upon assigned readings, lectures, and videos. 3 Course cr

ENV 606a, Methods in Climate Change and Health Research

Climate change is recognized as one of the greatest public health challenges of the twenty-first century. This course takes multidisciplinary approaches to identify, assess, quantify, and project public health impacts of climate change and of measures to address climate change. It first introduces the fundamental principles of health impact assessment and gives a brief overview of the public health approaches to address climate change. Then it applies advanced data analysis methodologies in environmental epidemiology, including time-series analysis, spatial epidemiology, and vulnerability assessment, to characterize the present climate-health (exposure-response) relationships and to identify vulnerable populations. This course discusses key concepts of scenario-based climate projections and their applications in projecting future health impacts, evaluating health co-benefits of climate mitigation policies,

and assessing climate change adaptation measures. Emphasis is placed on hands-on computer lab exercises with real-data examples and R scripts. 3 Course cr

ENV 608b, Our Air, Our Health

Exposure to air pollution is a leading contributor to the global disease burden. This course discusses major emission sources, atmospheric transformation and transport, measurement and modeling techniques for human exposure assessment, and the health impacts of air pollutants. Emphasis is placed on students gaining hands-on experience with measurement (e.g., low-cost sensors, passive samplers) and spatial analysis tools (e.g., ArcGIS) for application to research, public health practice, and community engagement. Through a series of laboratory sessions, students quantitatively characterize indoor and outdoor exposure concentrations and learn methods to critically assess data quality. The public health implications of air pollutant exposure are examined through review of recent epidemiological and toxicological research. The course discusses inequitable distribution of air pollutant exposure across the United States in relation to environmental health disparities. The health benefits of air pollutant intervention strategies in developed and developing regions and implications for policy action are also covered. 3 Course cr

ENV 613b, Writing as a Public Scholar Stephanie Hanes Wilson

Environmental scholars and practitioners increasingly recognize the need, and often have the desire, to communicate their passions and expertise to a wide lay audience. The seminar starts from the premise that to do this effectively requires a mastery of written storytelling, particularly in today's saturated and fractured media landscape. Students read popular works by classic and contemporary scholars, such as Rachel Carson and Richard Prum; practitioners in the sciences, such as Atul Gawande and Peter Wohlleben; and journalists such as Elizabeth Kolbert and John McPhee; as well as a growing number of authors, such as Bill McKibben, whose work crosses these categories. Students analyze some pieces multiple times, developing an increasingly nuanced understanding of storytelling technique. 3 Course cr

ENV 617b, Real-World Environmental Data Science Elena Grewal

The goal of this course is to provide students with a foundational understanding of what it takes to perform environmental data work in a practical, professional setting. To make sound policy decisions, we need data, and the reality is that data is often messy, difficult to find, and incomplete. In order to effectively leverage the data, students need to be able to troubleshoot when there is a problem. We focus on understanding the mechanics and nuances of working with messy data in the professional setting, not teaching statistics. We provide a high-level explanation of methods, what they tell us, and how they are useful, and then focus on implementation. 3 Course cr

ENV 618a, Anthropology of Smallholder Agriculture in Developing Countries

The premise of this course is that small-scale agriculture, its distinctive economic character, and its ecology shape each other in important ways. The course explores smallholder farming in the developing world through ethnographies. 3 Course cr

ENV 619b, Philosophical Environmental Ethics Stephen Latham

This is a philosophical introduction to environmental ethics. The course introduces students to the basic contours of the field and to a small number of special philosophical problems within the field. No philosophical background is required or expected. Readings are posted on Canvas and consist almost entirely of contemporary

essays by philosophers and environmentalists. The total reading load averages about three philosophy papers weekly – roughly sixty pages. Course avoids environmental ethics topics that are treated in other Yale courses: e.g., religion and ecology, and all but a very little bit of indigenous views of ecology. 3 Course cr

ENV 625b, Writing Workshop Roger Cohn

This course is aimed at helping students improve their writing. The goal is to develop writing skills and make students better able to communicate their work and ideas through writing that is clear, accessible, and free of jargon. Students are required to write every week throughout the course: short assignments (600–800 words) each week, and one longer assignment (1,500–2,000 words) due at the end of the term. 3 Course cr

ENV 626a or b, Writing for Publication in the Natural Sciences Simon Queenborough

This course is intended to give students insights into the process of writing natural science manuscripts. The seminar guides students through writing a paper and ends the term with a submitted manuscript. We also consider various strategies for writing, accountability, time management, and productivity. The course is aimed at students in the natural sciences with cleaned and analyzed data that they want to write up for publication.

ENV 630b, The Physical Science of Climate Change Peter Raymond and Xuhui Lee

The course provides students with core knowledge on the processes controlling the earth's climate system. The first half of the class focuses on the four components of the earth climate system, providing a knowledge base on the atmospheric energy and water budgets and the roles of anthropogenic greenhouse gases, the oceans, land and cryosphere in altering these budgets. Students also learn how to run a climate GCM (general circulation model). The second half of the class focuses on impacts of climate change on a number of societal sectors including natural ecosystems, energy use, water resources, the food system and the built environment. 3 Course cr

ENV 632a, Social Entrepreneurship Lab

Have you ever wondered what it would be like to practice social entrepreneurship? You don't have to found your own company to make a difference. Everyone can learn from the social entrepreneurship mindset and skillset, and apply it in their own way to create social impact. In this course, we combine theory and practice, applying a systematic framework to guide students through the social entrepreneurship experience. We start by identifying a social or environmental challenge each student is interested in tackling. Students form interdisciplinary teams to immerse themselves in characterizing the challenge, ideating potential solutions, and building business models around those solutions. Social Entrepreneurship Lab is a safe space to experiment, iterate, prototype, test, and fail. You don't need to launch your venture, though some teams will. You'll meet alumni who launched new ventures and social entrepreneurs from New Haven and around the world. All students are welcome; no prior experience necessary. 3 Course cr

ENV 634b, Ecology of Global Drylands William Lauenroth

This course explores the controls on the geographic distribution and community and ecosystem structure and functioning of drylands globally. Lectures, writing, and student-led discussions. 3 Course cr

ENV 635b, Renewable Energy Project Finance Daniel Gross

The course is intended to be a practicum, exposing students to real-world tools of the trade as well as the theory underlying them. In place of a textbook, students are provided with approximately 400 pages of actual project documents used for a U.S. wind energy project constructed relatively recently. Through weekly homework assignments, students develop the skills necessary to construct a detailed financial model, largely comparable to what would be used by an investment firm, project developer, or independent power producer. Modeling skills include sizing debt capacity, sensitivity analysis, stochastic forecasting, taxes, and the creation of financial statements. Lectures also provide an introduction to risk management, energy market dynamics, alternative contractual structures, financial structuring, and the core engineering and risks inherent in the most common renewable energy technologies. This course is entirely online. While cross-listed at the School of Management, it follows the YSE academic calendar. Admission requires an application consisting of a one-paragraph statement of interest. The application is available on Google Forms and can be submitted at <https://forms.gle/u5Y84yWqiYVQbB867>.
3 Course cr

ENV 641a, Market-Based Mechanisms for Water Management

This course provides students with both the theory and application of environmental water transactions (EWTs) to water management challenges, such as river restoration, drought-mitigation, and agricultural allocation. The geographic focus is primarily the western United States, as this region, out of necessity, has been very active in implementing EWTs in recent years. Other market-based mechanisms for water management also are explored, such as groundwater mitigation banks, urban stormwater markets, and water quality markets. The course also covers considerations such as environmental justice, tribal access to and use of water, and diversity/equity/inclusion in water management. A final project gives students the opportunity to develop a simple hydrological and water rights model for a fictional watershed to use as the basis for designing a suite of water transactions and market-based water management solutions. This is an online course taught by experienced professionals who value a hands-on approach to learning. In addition, the course features discussion of current events in water, case studies, and guest lectures from practitioners actively using market-based mechanisms for water management. 3 Course cr

ENV 642b, Environmental Justice/Climate Justice Gerald Torres

In this seminar, we focus on the evolution and development of the environmental justice movement. We pay particular attention to its embrace of climate justice, and we ask what conception of justice is at play in both the environmental justice and climate justice movements. We begin with a legal and social-historical survey but quickly bring the inquiry up to the current moment. We explore the legal and policy developments that have followed the environmental justice critique. Each student chooses a particular movement (or one expression of it) and writes a paper bringing to bear all of the questions we raise in the seminar. (For example, how did opposition from environmental justice advocates lead to a reformed climate change initiative in California? Or what is the genesis of the Sunrise movement, and what legal or policy changes would be required to make it a reality?) The paper need not focus on a domestic response, because the environmental/climate justice critique is now global.
3 Course cr

ENV 645a, Urbanization, Global Change, and Sustainability

Urbanization and associated changes in human activities on the land (*land use*) and in the physical attributes of Earth's surface (*land cover*) have profound environmental consequences. Aggregated globally, these effects constitute some of the most significant human impacts on the functioning of Earth as a system. This course examines the interactions and relationships between urbanization and global change at local, regional, and global scales with an emphasis on the biophysical aspects of urbanization. Topics include urbanization in the context of global land use change, habitat and biodiversity loss, modification of surface energy balance and the urban heat island, climate change and impacts on urban areas, urban biogeochemistry, and urbanization as a component of sustainability. Emphasis is on management of urban areas *worldwide* or at national scales for planetary sustainability. 3 Course cr

ENV 646a, Foundations of Agriculture and Environment

Agricultural systems have a profound impact on the environment, but also depend on environmental processes—such as climate and nutrient cycling—for continued productivity. Because of this two-way relationship, there has been a growing integration of environmental and agricultural sciences over the past several decades with growing recognition that designing and implementing agricultural systems that minimize environmental harm and benefit people is necessary to sustainable development. This course provides foundational knowledge of how agricultural and environmental systems are linked. The goal is to provide theoretical understanding of the important environmental and human processes, as well as practical experience interpreting these processes and applying them to real-world scenarios. 3 Course cr

ENV 653b, Maple: From Tree to Table Joseph Orefice

This course covers the cultural, industrial, and sustainable practices of nontimber forest products through the lens of maple sap and syrup. Maple sugar is a forest product unique to northeastern North America, and it has seen a resurgence in interest as global consumers seek nutritious, natural, and sustainably produced foods. This course covers the booming industry and culture around maple syrup, from backyard operations through modern 100,000-tap investment operations. Maple producers are on the front lines of climate change and forest health threats. The course provides students with the knowledge of how challenges related to forest health and climate change are directly impacting maple producers and how these producers are learning to adapt in ways that are environmentally friendly, ecologically sound, and financially competitive in a global market.

ENV 654a, Structure, Function, and Development of Trees

This course focuses on two aspects of plant life: (1) basic processes that drive plant development, such as seed formation, germination, seedling establishment, maturation, and senescence; and (2) basic structure and function of plants (such as root systems, leaf formation and development, height, and diameter growth). Differences between different groups of seed plants are analyzed from structural, functional, ecological, and evolutionary standpoints. Special attention is given to woody plants and their importance in the biosphere and human life. Coverage includes tropical, temperate, and boreal trees. Plant biology is discussed in the context of physiological and structural adaptations in terms of strength, storage, and water and solute transport. 3 Course cr

ENV 656b, Tree Physiology and Ecophysiology

Mineral nutrition and cycling, mycorrhizas, symbiosis, nitrogen fixation, light processing, photosynthesis, respiration, water relations including transpiration, and ecophysiology are covered. The interaction of photosynthesis with water relations, mineral nutrition, temperature, and environmental stress is discussed. Effects of climate changes on forests, past and present, and other current topics are also considered. Term paper required. 3 Course cr

ENV 659b, The Practice of Silviculture: Principles in Applied Forest Ecology P Mark Ashton

The scientific principles and techniques of controlling, protecting, and restoring the regeneration, composition, and growth of natural forest vegetation and its plantation and agroforestry analogs worldwide. Analysis of biological and socioeconomic problems affecting specific forest stands and design of silvicultural systems to solve these problems. Applications are discussed for management of wildlife habitat, bioenergy and carbon sequestration, water resources, urban environments, timber and nontimber products, and landscape design. Four to six hours lecture. One hour tutorial. Seven days fieldwork. Recommended: some knowledge of soils, ecology, plant physiology, human behavior, and resource economics. 4 Course cr

ENV 660a, Forest Dynamics Marlyse Duguid

This course introduces the study of forest stand dynamics – how forest structures and compositions change over time with growth and disturbances. Understanding the dynamic nature of forest stands is important for creating and maintaining a variety of critical ecosystem services sustainably and synergistically, including sustainable supplies of wood products, biodiversity and wildlife habitats, water, fire protection, and others. Through readings, lectures, discussions, and field trips we explore forest development processes and pathways, concentrating on the driving mechanisms and emergent properties including natural and human disturbances. We make use of New England forests as living laboratories while discussing how similar forest patterns and processes are played out throughout the temperate, tropical, and boreal worlds. This course is a core component of the M.F. degree but is explicitly designed to be accessible to anyone interested in an in-depth exploration of forest ecosystems. 3 Course cr

ENV 671a, Temperate Woody Plant Taxonomy and Dendrology

Dendrology literally translates as “the study of trees” and integrates morphology, phenology, ecology, biogeography, and the natural history of tree species. In this course students learn how to identify more than 120 individual species of woody plants using common morphological and ecological traits used for field identification. Dendrology is by nature context-specific, so this course has a focus on North American forest species, primarily of eastern North America. In addition, we use phylogenetic systematics as the structure for understanding taxonomy and the evolutionary history and relationships between species. Enrollment limited to thirteen. 3 Course cr

ENV 679a, Plant Ecophysiology

This course focuses on the physiological ecology of plants and their interaction with the biotic and abiotic environment, understood through the lens of first principles. We use a quantitative approach to demonstrate the linkages between photosynthesis, growth, and carbon allocation at the tissue and whole plant level, which can then be scaled up to forests and ecosystems. We also focus on specific physiological and anatomical adaptations plants use to survive in the many varied habitats on Earth. The

laboratory component of this course (ENV 679L) involves the theory, programming, and deployment of micrometeorological equipment to monitor environmental conditions in the field, as well as methods for measuring photosynthesis and growth in the greenhouse and field. Enrollment limited to twenty-four. 3 Course cr

ENV 684a, Forest Finance

Understanding the tools used in financial analysis is an important component of successful forestland investment and forest management decision-making. This course provides students with a basic suite of financial tools used in the acquisition and management of forestland/timber. It includes an overview of traditional financial analysis metrics used in land acquisition, timber management, and risk management, as well as topics related to supply and demand for forest products, international timberland investment, and emerging trends in forestland investing. The first eight weeks of the course are in lecture format, and the remainder of the course is a case study/project that gives students an opportunity to apply their knowledge in the analysis of an actual “deal.” 3 Course cr

ENV 688b, Forest Management and Operations Joseph Orefice

This course provides students with an opportunity to understand many aspects of forest management, especially as it relates to multiple-use forestry. Course content includes understanding and critique of forest inventory, and students are introduced to growth and yield concepts. Forest planning and optimization for objectives such as forest products and carbon are covered. Stewardship of forestland is discussed, as are legal aspects to land ownership and forest conservation. Included are sections focused on forest operations. Students gain experience in the diverse elements and aspects of forest harvesting. The course is taught from the perspective of what a forester should know about harvesting, which includes logging safety, timber harvesting operations and sale administration, legal dimensions of harvesting, planning and maintaining forest access systems, timber procurement and appraisal, logging costs and analysis, and environmental and social influences. Field experiences complement lecture material. 3 Course cr

ENV 692a, Science and Practice of Temperate Agroforestry

This course explores the science and practices of temperate agroforestry, covering current knowledge of agroforestry science and shedding light on the myths and assumptions that have yet to be tested regarding the integration of trees in agricultural systems. The course begins with an overview of modern agriculture to help us better understand why agroforestry systems have potential to improve the sustainability of farming systems. We also cover the social science regarding agroforestry and why it has not been widely adopted. Silvopasture and forest farming systems are the primary focus, but windbreaks, alley cropping, and riparian forest buffers are also covered. The field of agroforestry has struggled with the promotion of hypothetical practices; this course introduces students to real-world production agroforestry systems and helps them better contribute to financially viable and environmentally sound agricultural operations. 3 Course cr

ENV 695a, Yale Forest Forum Series: (Re)Considering Planted Forests for the 21st Century

The Forest School at the Yale School of Environment has developed this seminar in collaboration with the UN Food and Agriculture Organization, The Forests Dialogue, and the Center for Business and the Environment at Yale. The series focuses on

(re)considering intensively managed planted forests for the 21st century, drawing on a wide range of perspectives and experiences from around the world. Planted forests, including tree plantations established for wood production, continue to grow in both extent and significance. Tree plantations currently provide almost half of the world's industrial wood, a proportion expected to increase significantly in coming decades. They also have great potential to deliver environmental services and social benefits. However, many aspects of tree plantations have been and remain controversial, with concerns that associated environmental and social costs often outweigh economic and other benefits. The seminar is guest lecture/discussion based and includes a weekly public webinar hosted by the Yale Forest Forum (YFF). The seminar brings in a wide range of experts to discuss the future role of intensively managed planted forests (IMPF) in addressing urgent needs/changes related to climate, resource, societal, and environmental challenges at regional and global scales. Guest speakers represent forestry, industry, conservation, communities, and climate science. Speakers describe their personal and organizational experience with IMPF, and discuss the environmental, economic, and societal implications for increased development IMPFs for the plantations sector, forest products industry and society.

ENV 706b, Organic Pollutants in the Environment

An overview of the pollution problems posed by toxic organic chemicals, including petroleum, pesticides, PCBs, dioxins, chlorinated solvents, and emerging contaminants such as PFAS, personal care products, and brominated compounds. The course covers the processes governing the environmental fate of organic pollutants (e.g., evaporation, bioconcentration, sorption, biodegradation, migration in groundwater), as well as tools for the prevention and remediation of organic pollution. Previous knowledge of organic chemistry is not required (but is welcome). 3 Course cr

ENV 708b / ENAS 640, Aquatic Chemistry

A detailed examination of the principles governing chemical reactions in water. Emphasis on developing the ability to predict the aqueous chemistry of natural, engineered, and perturbed systems based on a knowledge of their biogeochemical setting. Calculation of quantitative solutions to chemical equilibria. Focus on inorganic chemistry. Topics include elementary thermodynamics, acid-base equilibria, alkalinity, speciation, solubility, mineral stability, redox chemistry, and surface complexation reactions. 3 Course cr

ENV 712b, Water Management

An exploration of water management at scales ranging from local to global. The course looks at multiple dimensions of the water crisis, including both human and ecosystem impacts; quantity and quality problems; and infrastructural and institutional issues. Theory is illustrated through a variety of case studies. Topics covered include global water resources; flooding; water scarcity; residential, agricultural, and industrial water use; water and health; water justice; impacts of climate change and land-use change; stormwater management; dams and other technologies for water management; human impacts on aquatic ecosystems; water and energy; water economics; water rights; water conflict and cooperation. 3 Course cr

ENV 717b, Tropical Field Ecology

This course is designed to provide students with an introduction to tropical biology and the conservation of biodiversity in the tropics, through a combination of lectures, discussions, and hands-on research projects. Lectures provide background on the

climate, structure, function, and diversity of tropical forests, with an emphasis on the evolutionary and ecological processes shaping these ecosystems. Through guest lectures and hands-on projects, students also gain experience with study design, data collection methods, statistical analysis, and scientific writing and presentations. If conditions permit, this course includes a mandatory spring break field trip to the Neotropics. Prerequisite: a basic background in ecology through prior course work (either at YSE or through undergraduate courses). 3 Course cr

ENV 723a, Wetlands Ecology, Conservation, and Management Kealoha Freidenburg
Wetlands are ubiquitous. Collectively they cover 370,000 square miles in the United States and globally encompass more than five million square miles. Most points on a map are less than one kilometer from the nearest wetland. Yet wetlands are nearly invisible to most people. In this course we explore wetlands in all of their dimensions, including the critical services they provide to other systems, the rich biodiversity they harbor, and their impact on global climate. Additionally, wetlands are linchpin environments for scientific policy and regulation. The overarching aim of the course is to connect what we know about wetlands from a scientific perspective to the ways in which wetlands matter for people. 3 Course cr

ENV 726b, Observing Earth from Space Xuhui Lee
A practical introduction to satellite image analysis of Earth's surface. Topics include the spectrum of electromagnetic radiation, satellite-borne radiometers, data transmission and storage, computer image analysis, the merging of satellite imagery with GIS and applications to weather and climate, oceanography, surficial geology, ecology and epidemiology, forestry, agriculture, archaeology, and watershed management. 3 Course cr

ENV 728a, Introduction to Statistics and Data Analysis in the Environmental Sciences
An introduction to statistics and data analysis with emphasis on practical applications in the environmental sciences. Includes graphical analysis, common probability distributions, hypothesis testing, confidence intervals, and linear regression. The second part of the course introduces the topics of multiple regression and ANOVA that are typically not covered in an introductory class such as AP statistics. There are weekly problem sets, 2 exams, and a final project. Assignments require use of Minitab, SPSS, or R. This course is a prerequisite for other statistics courses offered through YSE, and it presents statistical methods used in many Yale courses in both the natural and social sciences. Three hours lecture. 3 Course cr

ENV 729b, Caribbean Coastal Development: Science and Policy
This seminar explores human-ecosystem interactions at the land-sea interface in the tropics, with Caribbean islands as the main study sites. Many tropical islands are undergoing rapid, uncontrolled development, placing severe local stress on several unique and vulnerable ecosystems types. In addition, human-induced environmental changes on scales up to global also impose stresses. This course examines the normal functioning of these ecosystems, scientific methods to evaluate and characterize ecosystem condition and processes, how human activities interfere with natural cycles in biophysical systems, and what management and policy tools can be applied to reduce impacts. 3 Course cr

ENV 731b, Tropical Field Botany

This course teaches students how to identify the most important tropical plant families, with an emphasis on woody taxa. Students learn key characteristics for identification. We concentrate on families that have high economic, ecological, or ethnobotanical importance. We also discuss distribution, habitat, and ecology. The course has a strong practical component, and instructors emphasize vegetative characters to identify families and higher-level taxa. The course includes a two-week field trip to Costa Rica over spring break. Enrollment limited to twelve. 3 Course cr

ENV 734b, Biological Oceanography Mary Beth Decker

This course explores a range of oceanic ecosystems and how these environments function as coupled physical/biological systems. Solar energy drives the structuring of the oceans in the vertical dimension, and the formation of both deep and surface currents. These currents are the means by which heat and material are redistributed and are the determinants of where nutrients are available for support of primary production. The currents and other physical processes also determine the distribution and abundance of organisms from phytoplankton to fish and whales. Anthropogenic impacts on oceans are also explored, such as the effects of fishing and climate change. This natural science course provides a foundation for those interested in the ecology of marine systems and in the management of coastal zones. Enrollment limited to fifteen. Recommended prerequisite: college-level biology or ecology course. 3 Course cr

ENV 744b, Conservation Science and Landscape Planning

This advanced course applies ecological principles to understand and manage biodiversity and attendant ecosystem functioning and services in the anthropocene. The course addresses the ethical and functional basis for conservation and fosters thinking about why and how humans ought to share the planet with nonhuman life. It covers scientific principles such as evolution, life-history and the viability of species, species endangerment and extinction risk, the kinds of biodiversity, the spatial distribution of biodiversity, the functional roles of species in ecosystems, vulnerability and risk assessments, and valuing biodiversity and ecosystem services. The course applies these principles to the exploration of such topics as biodiversity's role in the functioning and sustainability of ecological systems, restoration of environmental damages, conserving biodiversity in dynamic landscapes, adapting landscapes to climate change, balancing conservation with urban development and agriculture, and renewable energy siting. It provides students with the quantitative skills to conduct population viability analyses, geospatial analyses of the distribution of biodiversity across landscapes, vulnerability analyses, and decision analysis to balance trade-offs among multiple objectives of human land development and biodiversity conservation. Prerequisites: ENV 602 or equivalent course in population or community ecology, F&ES 755 or equivalent course in GIS, and ENV 728 or equivalent course in statistical analysis of biological data. A course in economics or applied math for environmental studies is strongly encouraged. 4 Course cr

ENV 750a, Writing the World Verlyn Klinkenborg

This is a practical writing course meant to develop the student's skills as a writer. But its real subject is perception and the writer's authority – the relationship between what you notice in the world around you and what, culturally speaking, you are allowed to notice. What you write during the term is driven entirely by your own interest and attention.

How you write is the question at hand. We explore the overlapping habitats of language – present and past – and the natural environment. And, to a lesser extent, we explore the character of persuasion in environmental themes. Every member of the class writes every week, and we all read what everyone writes every week. It makes no difference whether you are a would-be journalist, scientist, environmental advocate, or policy maker. The goal is to rework your writing and sharpen your perceptions, both sensory and intellectual. Enrollment limited to fifteen. 3 Course cr

ENV 751b, Sampling Methodology and Practice

This course is intended to provide a fundamental understanding of the principles of statistical sampling, alternative estimators of population parameters, and the design basis for inference in survey sampling. Natural, ecological, and environmental resource applications of sampling are used to exemplify numerous sampling strategies. Sample designs to be studied include simple random; systematic; unequal probability, with and without replacement; stratified sampling; sampling with fixed-radius plots; horizontal point sampling; and line intercept. The Horvitz-Thompson, ratio, regression, and other estimators are introduced and used repeatedly throughout the course. Three hours lecture. Weekly and biweekly problem sets and final project. 3 Course cr

ENV 753a, Regression Modeling of Ecological and Environmental Data

This course in applied statistics assists scientific researchers in the analysis and interpretation of observational and field data. After considering the notion of a random variable, the statistical properties of linear transformations and linear combinations of random data are established. This serves as a foundation for the major topics of the course, which explore the estimation and fitting of linear and nonlinear regression models to observed data. Three hours lecture. Statistical computing with R, weekly problem exercises. Prerequisite: a course in introductory statistics. 3 Course cr

ENV 755b, Modeling Geographic Space

An introduction to the conventions and capabilities of image-based (raster) geographic information systems (GIS) for the analysis and synthesis of spatial patterns and processes. In contrast to ENV 756, the course is oriented more toward the qualities of geographic space itself (e.g., proximity, density, or interspersion) than the discrete objects that may occupy such space (e.g., water bodies, land parcels, or structures). Three hours lecture, problem sets. No previous experience is required. 3 Course cr

ENV 756a, Modeling Geographic Objects

This course offers a broad and practical introduction to the nature and use of drawing-based (vector) geographic information systems (GIS) for the preparation, interpretation, and presentation of digital cartographic data. In contrast to ENV 755, the course is oriented more toward discrete objects in geographical space (e.g., water bodies, land parcels, or structures) than the qualities of that space itself (e.g., proximity, density, or interspersion). Three hours lecture, problem sets. No previous experience is required. 3 Course cr

ENV 757a or b, Data Exploration and Analysis Ethan Meyers

An introduction to the R computing language, statistical plots and transformations, a review of introductory statistics techniques, and an extension into more advanced topics including multiple regression, ANOVA and ANCOVA, binary and multinomial logistic regression, and non-parametric techniques such as the bootstrap and permutation tests. This course also covers data types, data cleaning, and web scraping.

This course is designed to follow a prior introduction to statistics course such as ENV 728. Weekly problem sets, two exams, and a final project. Three hours lecture.
3 Course cr

ENV 758b, Multivariate Data Analysis in the Environmental Sciences

An introduction to the analysis of multivariate data. Topics include multivariate analysis of variance (MANOVA), principal components analysis, cluster analysis, canonical correlation, ordination methods including multidimensional scaling, discriminate analysis, factor analysis, and structural equations modeling. Emphasis is placed on practical application of multivariate techniques to a variety of examples in the natural and social sciences. Students are required to select a dataset early in the term for use throughout the term. There are regular assignments and a final project. Extensive use of computers is required—students may use any combination of R, SAS, SPSS, MINITAB, and STATA. Three hours lecture/discussion. Prerequisites: a prior course in introductory statistics and a good understanding of multiple linear regression.
3 Course cr

ENV 759a, Power, Knowledge, and the Environment: Social Science Theory and Method

Course on the social scientific contributions to environmental and natural resource issues, emphasizing equity, politics, and knowledge. Section I, introduction to the course. Section II, disaster and environmental perturbation: the social science of emerging diseases; and the social origins of disaster. Section III, boundaries: cost and benefit in the Green Revolution; riverine restoration; and aspirational infrastructure. Section IV, methods: working within development projects, and rapid appraisal and consultancies. Section V, local communities, resources, and (under)development: representing the poor, development discourse, and indigenous peoples and knowledge. This is a core M.E.M. specialization course in YSE and a core course in the combined YSE/Anthropology doctoral degree program. Enrollment capped. 3 Course cr

ENV 760b, Conservation in Practice: An International Perspective

This seminar focuses on the practice of wildlife and wildlands conservation, examining key topics from the dual perspectives of academic literature and actual field experiences; bringing together interdisciplinary thinking; and drawing on examples from Africa, Asia, Latin America, and the United States. The thematic outline of the seminar is organized around three fundamental questions in nature conservation: What are we trying to save—and why? How is this being done—and how has it changed over time? What lessons are we learning—and what overarching issues remain problematic? Specific topics include how different players define and value wildness; selection and prioritization of conservation targets; comparisons of various species and landscape conservation approaches; and governance and decision-making in conservation, including ties between conservation and development and community-based conservation. During the term, students work in small teams to assess one of several current case studies—integrating biological, social, economic, and governance considerations—to propose an effective path forward for conservation. Participation and leadership are key, as the seminar is discussion-based and approximately half the sessions are student-led. Evaluation is based on participation, presentations, and a final paper. 3 Course cr

ENV 761a, Negotiating International Agreements: The Case of Climate Change

Susan Biniiaz

This class is a practical introduction to the negotiation of international agreements, with a focus on climate change. Through the climate lens, students explore cross-cutting features of international agreements, the process of international negotiations, the development of national positions, advocacy of national positions internationally, and the many ways in which differences among negotiating countries are resolved. The seminar also examines the history and substance of the climate change regime, including, *inter alia*, the 1992 UN Framework Convention on Climate Change, the 1997 Kyoto Protocol, the 2009 Copenhagen Accord, the 2015 Paris Agreement, and recent developments. There are two mock negotiations. 3 Course cr

ENV 764a, Sociology of Sacred Values: Modernity, Ecology, and Policy

This course equips students to understand how moral culture shapes all environmental issues and management, driving even the most basic decisions that on the surface may appear to be entirely obvious, rational, or scientific. Modern people and modern institutions are propelled toward certain ends and possibilities that are inescapably rooted in questions of human culture about who we are, what we should do, and why it all matters. The first half of the course draws on theoretical readings from sociology, philosophy, and religious studies to understand the ubiquity of sacred codes and how they work, with an emphasis on late modernity, rationality, capitalism, and the sacred/profane. The second half of the course introduces recent case studies to see in practice how moral values are embedded in environmental work, including policy making, advocacy, the free market, scientific research, race and class, death and extinction, ecotourism, and more. Cultivating a lens to see culture and moral values in all things will improve students' applied work in all sectors. 3 Course cr

ENV 767b, Tools for Conservation Project Design and Management

As wildlife and wildland conservation programs have multiplied and grown in size, conservation organizations have sought methods to improve strategic project planning, assessment of progress, cross-project comparison, learning of lessons, and transparency for donors. To address these challenges, major nonprofit organizations have collaboratively designed a set of decision-support tools for planning field projects and programs and for monitoring their progress, summarized in the "Open Standards for the Practice of Conservation" (<http://cmp-openstandards.org>). Use of these tools has allowed organizations to more clearly articulate strategies, define priority actions, critically assess success, manage adaptively, and derive lessons—all of which help to improve effectiveness and respond to donor interests. Students in this course explore a mutually reinforcing suite of these project tools: their underlying principles are introduced, students practice the techniques, and current case studies from field conservation are examined to explore tool utility. Students synthesize use of these design tools in a final project proposal focused on a single case study of their choice. The suite of decision-support tools covered includes situation (logic) models for project design, stakeholder assessments, threats and opportunities analysis, conservation target identification, and monitoring frameworks. Students gain experience in design of projects and their monitoring, as well as familiarity with budgeting. Enrollment limited to twelve. 3 Course cr

ENV 771b, Fundamentals of Green Engineering and Green Chemistry

There is a broad desire to ensure that consumer products, manufacturing processes, and material and energy systems are compatible with public health and environmental sustainability. This course provides fundamental knowledge of the frameworks, methods, tools, and techniques of designing for sustainability. Through an understanding of conceptual contracts and application to real-world case studies, students learn the impacts of design on health (including toxic and ecotoxic effects) and the ways to ensure that new products, processes, and systems can be constructed through the principles of green engineering and green chemistry. This course provides the foundation for more advanced investigations in sustainable design; there are no prerequisites. 3 Course cr

ENV 773a, Air Pollution Control Drew Gentner

An overview of air quality problems worldwide with a focus on emissions, chemistry, transport, and other processes that govern dynamic behavior in the atmosphere. Quantitative assessment of the determining factors of air pollution (e.g., transportation and other combustion-related sources, chemical transformations), climate change, photochemical “smog,” pollutant measurement techniques, and air quality management strategies. 3 Course cr

ENV 781b, Applied Spatial Statistics

An introduction to spatial statistical techniques with computer applications. Topics include modeling spatially correlated data, quantifying spatial association and autocorrelation, interpolation methods, variograms, kriging, and spatial point patterns. Examples are drawn from ecology, sociology, public health, and subjects proposed by students. Four to five lab/homework assignments and a final project. The class makes extensive use of the R programming language. Prerequisite: introductory course in statistics is mandatory. An intermediate-level course in statistical modeling and handling spatial data is strongly preferred, but not required. 3 Course cr

ENV 789a, Energy and Development

This course delves into the relationship between energy use and economic development, at a household, national, and global scale. The course provides both a quantitative and qualitative understanding of poverty, energy demand, and the relationship between the two. Students grapple with different income and multidimensional poverty and standard of living indicators, and with GDP and its limitations as a human development measure. They learn about energy poverty in various parts of the world and about energy consumption patterns with rising income. Students study actual household survey and national statistics data on consumption and energy use, and are exposed to cutting-edge research on standard of living measures and their embodied energy needs. The course covers basic models for household energy transitions and appliance diffusion. This is a seminar course, wherein students are expected to present readings in class. The course involves one term project and presentation, which may be quantitative or qualitative. Prerequisites: basic math, Excel, and microeconomics. Those selecting technical projects should have basic R or other data manipulation skills. 3 Course cr

ENV 796b, Biopolitics of Human-Nonhuman Relations

Seminar on the “posthumanist” turn toward multispecies ethnography. Section I, introduction to the course. Section II, the ontological turn: multispecies ethnography; and ecology and human consciousness. Section III, fauna: human-animal conflict;

hunting and politics; and the bushmeat “crisis.” Section IV, flora: “weedy/invasive/pest” species; and ethnobotany. Section V, the long and broad view: the history of natural history; and the classics. Section VI, class contributions: student-selected readings; student presentations of seminar papers; and lecture by teaching fellow. Enrollment capped.

3 Course cr

ENV 800b, Energy Economics and Policy Analysis

This course examines energy policy issues that pertain to the environment, with a focus on providing tools for analyzing these issues. A primary objective is to apply economics to particular issues of energy markets, environmental impacts, investment in renewables, and other energy issues such as transportation and energy efficiency. We cover the economic and technical considerations behind a particular energy policy issue and then discuss a related article or case study. Prerequisites: ENV 512 (or equivalent background) and at least one course on energy. 3 Course cr

ENV 804a, Economics of Natural Resources Robert Mendelsohn

Linking of abstract economic concepts to concrete policy and management decisions. Application of theoretical tools of economics to global warming, pollution control, fisheries, water management, forestry, recreation, and mining. 3 Course cr

ENV 805a, Seminar on Environmental and Natural Resource Economics

This seminar is based on outside speakers and internal student/faculty presentations oriented toward original research in the field of environmental and natural resource economics and policy. Presentations are aimed at the doctoral level, but interested master’s students may enroll with permission of the instructors. 1½ Course cr

ENV 807a, Business and Environment: Management and Strategy

This survey course focuses on the policy and business logic for making environmental issues and sustainability a core focus of corporate strategy and management. Students are asked to analyze when and how sustainability leadership can translate into competitive advantage by helping to cut costs, reduce risk, drive growth, and promote brand identity and intangible value. The course combines lectures, case studies, and class discussions on management theory and tools, the legal and regulatory frameworks that shape the business-environment interface, and the evolving role of business in society, including how to deal with a world of diverse stakeholders, increasing transparency, and rising expectations related to corporate environmental, social, and governance (ESG) performance. Self-scheduled examination. 3 Course cr

ENV 814a, Energy Systems Analysis

This lecture course offers a systems analysis approach to describe and explain the basics of energy systems, including all forms of energy (fossil and renewable), all sectors/activities of energy production/conversion, and all energy end uses, irrespective of the form of market transaction (commercial or noncommercial) or form of technology (traditional as well as novel advanced concepts) deployed. Students gain a comprehensive theoretical and empirical knowledge base from which to analyze energy-environmental issues as well as to participate effectively in policy debates. Special attention is given to introducing students to formal methods used to analyze energy systems or individual energy projects and also to discussing traditionally less-researched elements of energy systems (energy use in developing countries; energy densities and urban energy use; income, gender, and lifestyle differences in energy

end-use patterns) in addition to currently dominant energy issues such as climate change. Active student participation is required, including completion of problem sets. Participation in extra-credit skill development exercises (presentations, fact-finding missions, etc.) is encouraged. Invited outside speakers complement topics covered in class. 3 Course cr

ENV 816a, Electric Utilities: An Industry in Transition

The U.S. electric utility industry is a \$400 billion business with capital expenditures on the order of \$100 billion per year to replace aging infrastructure, implement new technologies, and meet new regulatory requirements. A reliable electricity infrastructure is essential for the U.S. economy and the health and safety of its citizens. The electric industry also has a significant impact on the environment. In the United States, electric power generation is responsible for about 40 percent of human-caused emissions of carbon dioxide, the primary greenhouse gas. Electric utilities in the United States are at a crossroads. Technological innovations, improving economics, and regulatory incentives provide a transformational opportunity to implement demand-side resources and distributed energy technologies that will both lower emissions and improve service to customers. Such significant changes could, however, disrupt existing utility business models and therefore may not be fully supported by incumbent utilities. This course focuses on the issues, challenges, risks, and trade-offs associated with moving the U.S. utility industry toward a cleaner, more sustainable energy future. We explore how utilities are regulated and how economic factors and regulatory policies influence outcomes and opportunities to align customer, environmental, and utility shareholder interests to craft win-win-win solutions. 3 Course cr

ENV 817a, Urban, Suburban, and Regional Planning Practice

Our cities, towns, and regions represent the cumulative impact of planning policies implemented at multiple scales over the past century. This course explores the dynamic trends facing the United States and its communities and the evolution in planning practice that is occurring at the local and regional scale to address them. It looks at both suburban and urban approaches. The recent pandemic, multiple recessions, climate change, and a lack of social cohesion call for a new triple bottom-line approach to decision-making for our future. Existing policies and governance structures are not always well suited for the new challenges and opportunities that we face. Local, state, and the national government are, to varying degrees, crafting new solutions to the challenges of urban and suburban America. 3 Course cr

ENV 819b, Strategies for Land Conservation

This is a professional seminar on private land conservation strategies and techniques, with particular emphasis on the legal, financial, and management tools used in the United States. The seminar is built around presentations by guest speakers from land conservation organizations. Speakers are assigned topics across the land conservation spectrum, from identification of target sites, through the acquisition process, to ongoing stewardship of the land after the deal is done. The tools used to protect land are discussed, including the basics of real estate law, conservation finance, and project/organizational management. Students are required to undertake a clinical project with a local land conservation organization. Enrollment limited to twenty-five; preference to second-year students if limit reached. 3 Course cr

ENV 820b, Land Use Law and Environmental Planning

This course explores the regulation by local governments of land uses in urban, rural, and suburban areas and the effect of development on the natural environment. The course helps students understand how the environment can be protected through effective regulation at the local level. It provides an introduction to federal, state, regional, and local laws and programs that promote watershed protection and to the laws that delegate to local governments primary responsibility for decision-making in the land use field. Theories of federalism, regionalism, states' rights, and localism are studied, as are the cases that provide a foundation in regulatory takings and the legitimate scope of land use regulation. The history of the delegation of planning and land use authority to local governments is traced, leading to an examination of local land use practices that relate to human settlement patterns, water resources, low-impact development, watershed protection, alternatives to Euclidean zoning, brownfields redevelopment, and resiliency and adaptation in response to sea-level rise and climate change. Students engage in empirical research to identify, catalog, and evaluate innovative local laws that successfully protect environmental functions and natural resources, and the manner in which towns incorporate climate change into their planning and regulations. Nearby watersheds are used as a context for the students' understanding of the strengths and weaknesses of local planning and regulation. Attention is paid, in detail, to how the development of the land adversely affects natural resources and how these impacts can be mitigated through local planning and subsequent adoption of environmental and other regulations designed to promote sustainable development in a climate-changing world. 3 Course cr

ENV 822a, Strategic Communication: Delivering Effective Presentations

Class attendance is mandatory, including the first day – students are required to attend the first class session in order to remain enrolled or to bid for the course. There are four sections to choose from: two sections offered in fall-2 and two sections offered in spring-2. They are all the same half-term course, just offered at different times in the term. The focus of this course is to increase one's competencies in oral communication and presentation. Developing and executing effective communication strategies is essential in a variety of business settings. Business leaders are often expected to present their message with confidence and clarity to employees, clients, partners, investors, and the public. This highly interactive, practical course will help students develop confidence in public speaking through weekly presentations and assignments, lectures and discussions, guest speakers, simulated activities, and filmed feedback. Students will be given the opportunity to present both individually and as part of a team. We explore the essentials of communication strategy and persuasion: audience analysis, message construction, communicator credibility, and delivery. Students at all levels of mastery of public speaking will benefit from this course. Enrollment is limited to 36. Prerequisite: YSE students must submit a statement of interest to the instructor. 1½ Course cr

ENV 824b, Environmental Law and Policy

This course provides an introduction to the legal requirements and policy underpinnings of the basic U.S. environmental laws, including the Clean Air Act, Clean Water Act, and various statutes governing waste, food safety, and toxic substances. Students examine and evaluate current approaches to pollution control and resource management as well as the “next generation” of regulatory strategies, including economic incentives, voluntary emissions reductions, and information

disclosure requirements. This course investigates mechanisms for addressing environmental issues at the local, regional, and global levels, and explores the intersection between environmental and energy law and policy. Students gain an understanding of overarching legal and policy concepts, such as federalism, administrative procedure, separation of powers, environmental justice, judicial review, and statutory interpretation. 3 Course cr

ENV 834b, Environmental Economics and Policy

This is a course in environmental and natural resource economics and policy. It covers both general methodological principles and specific applications. Rather than serving as a standard course in environmental and natural resource economics, the material is tailored specifically to master's students pursuing professional degrees in environmental management. The course therefore has a focus on environmental problem solving in the real world. Topics covered include, but are not limited to, evaluation of environmental policies (e.g., standards, taxes, cap-and-trade); cost-benefit analysis and its critiques; nonmarket valuation (ecosystem services, revealed and stated preferences); discounting and macroeconomic perspectives on climate change; management of nonrenewable resources (oil, minerals, etc.); management of renewable resources (forests, fisheries, etc.); land and biodiversity conservation; the relationship between development, trade, and the environment; strategic incentives for international environmental agreements; and environmental behavioral economics. Prerequisite: ENV 512 or equivalent. 3 Course cr

ENV 835a and ENV 835Eb, Seminar on Land Use Planning

Land use control exercised by state and local governments determines where development occurs on the American landscape, the preservation of natural resources, the emission of greenhouse gases, the conservation of energy, and the shape and livability of cities and towns. The exercise of legal authority to plan and regulate the development and conservation of privately owned land plays a key role in meeting the needs of the nation's growing population for equitable housing, energy, and nonresidential development as well as ensuring that critical environmental functions are protected from the adverse impacts of land development. This course explores the multifaceted discipline of land use and urban planning and their associated ecological implications. Numerous land use strategies are discussed, including identifying and defining climate change mitigation and adaptation strategies, including affordable housing, community revitalization, energy development and siting, equitable community engagement, transit-oriented development, building and neighborhood energy conservation, distressed building remediation, jobs and housing balance, coastal resiliency, and biological carbon sequestration. The course also explores how recent events impact these planning issues. The focus is on exposing students to the basics of land use and urban planning, especially in the United States but also internationally, and serving as an introduction for a YSE curricular concentration in land use. Guest speakers are professionals involved in sustainable development, land conservation, smart growth, renewable energy, and climate change management. 1½ Course cr per term

ENV 836a / ANTH 541a / HIST 965a / PLSC 779a, Agrarian Societies: Culture, Society, History, and Development

Louisa Lombard and Elisabeth Wood
An interdisciplinary examination of agrarian societies, contemporary and historical, Western and non-Western. Major analytical perspectives from anthropology,

economics, history, political science, and environmental studies are used to develop a meaning-centered and historically grounded account of the transformations of rural society. Team-taught. 3 Course cr

ENV 838b, Life-Cycle Assessment

The increasing concerns about environmental pollution and resource challenges drive the development of sustainable solutions that can meet societal needs without compromising the environment or depleting the resources for future generations. Given many technological, behavioral, and policy options, it is challenging to determine which option best serves humanity and the environment. Life-cycle assessment (LCA) offers a systems approach to support these decisions. This course is an overview of life-cycle thinking, the fundamental theory of LCA framework, and practical applications in supporting real-world decision-making. Students learn state-of-the-art LCA tools, industrial case studies, and advanced LCA methodologies. The course has an emphasis on systems thinking. It is appropriate for all M.E.M. specializations. 3 Course cr

ENV 839b, Power in Conservation

This course examines the anthropology of power, particularly power in conservation interventions in the global South. It is intended to give students a toolbox of ideas about power in order to improve the effectiveness of conservation. Conservation thought and practice are power-laden: conservation thought is powerfully shaped by the history of ideas of nature and its relation to people, and conservation interventions govern and affect peoples and ecologies. This course argues that being able to think deeply, particularly about power, improves conservation policy making and practice. Political ecology is by far the best known and published approach to thinking about power in conservation; this course emphasizes the relatively neglected but robust anthropology of conservation literature outside political ecology, especially literature rooted in Foucault. It is intended to make four of Foucault's concepts of power accessible, concepts that are the most used in the anthropology of conservation: the power of discourses, discipline and governmentality, subject formation, and neoliberal governmentality. The important ethnographic literature that these concepts have stimulated is also examined. Together, theory and ethnography can underpin our emerging understanding of a new, Anthropocene-shaped world. This course will be of interest to students and scholars of conservation, environmental anthropology, and political ecology, as well as conservation practitioners and policy makers. It is a required course for students in the combined YSE/Anthropology doctoral degree program. It is highly recommended for M.E.Sc. students who need an in-depth course on social science theory. M.E.M. students interested in conservation practice and policy making are also encouraged to consider this course, which makes an effort to bridge the gap between the best academic literature and practice. Open to advanced undergraduates. No prerequisites. Three-hour discussion-centered seminar. 3 Course cr

ENV 840a / GLBL 7170, Climate Change Policy and Perspectives

This course examines the scientific, economic, legal, political, institutional, and historic underpinnings of climate change and the related policy challenge of developing the energy system needed to support a prosperous and sustainable modern society. Particular attention is given to analyzing the existing framework of treaties, law, regulations, and policy – and the incentives they have created – which have done little over the past several decades to change the world's trajectory with regard to the build-up of greenhouse gas emissions in the atmosphere. What would a twenty-first-century

policy framework that is designed to deliver a sustainable energy future and a successful response to climate change look like? How would such a framework address issues of equity? How might incentives be structured to engage the business community and deliver the innovation needed in many domains? While designed as a lecture course, class sessions are highly interactive. Self-scheduled examination. 3 Course cr

ENV 850a, International Organizations and Conferences

This course focuses on the historic, present, and future roles of international environmental conferences. Through guest speakers, assigned readings, and discussions, students explore conferences including IUCN's World Conservation Congress, the UN's Convention on Biological Diversity, UNFCCC's climate change conference, the UN Environment Programme (UNEP), and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Students, along with visiting alumni and guest speakers, discuss the roles and impacts of the various conferences in international environmental decision-making and the future of international conferences in a post-COVID world. The course also assesses the potential for improved equity, justice, and inclusion in international conferences, organizations, and their secretariats. Students attending fall conferences (in person or virtually) develop work plans to be completed during the conference under the guidance of their host delegations and the instructor. 3 Course cr

ENV 860a, Understanding Environmental Campaigns

This course is about the strategies and tactics used by successful environmental campaigns, taught from a practitioner's perspective. It is also a course about environmental policy making. Policy doesn't just happen the way it's described in grade school civics textbooks. And it isn't just policy makers who make it. Corporate and civic interests play an influential role at all levels of policy making. As future participants in the policy process, whether you come at it from a perch in government or business, as an advocate, or as a private citizen, you can jump-start your ability to participate and respond by understanding how policy campaign advocacy impacts policy making. Though this topic is neither well documented nor regularly taught, there is a toolkit that can be learned. Most environmental campaigners and policy makers learn about policy campaigning on the job. This course attempts to advance understanding of the policy-making process by exposing YSE students to case examples from the environmental policy-making world of the past decade. The course examines selected case examples of successful policy campaigns and seeks to tease out lessons and best practice. No single environmental campaign is the same, and strategies and tactics are always evolving, but there are key lessons about campaign practices that can be learned. Some of the case studies examined in this course in the past have included campaigns enacting anti-toxic legislation in Washington State; stopping the Keystone XL Pipeline; shutting coal-fired power plants across the United States; protecting the Great Bear Rainforest and the boreal forest in Canada; stopping water privatization in Bolivia; banning the use of high-sulphur fuels in the Arctic; securing an international ban on Arctic ocean fishing; catalyzing the decarbonization of supply chain emissions at Levi's; and encouraging banks and insurers to commit to Paris-aligned lending and financing. Campaigners who have played leadership roles in the campaigns we examine will join us for class. We examine each case, seek a practical understanding of strategies and tactics used by each campaign, and attempt to synthesize lessons and best practice. 3 Course cr

ENV 878a, Climate and Society: Past to Present Michael Dove

Seminar on the major traditions of thought regarding climate, climate change, and society, drawing largely on the social sciences and humanities. Section I, introduction to the course. Section II, disaster: the social origins of disaster; and the attribution of societal “collapse” to extreme climatic events. Section III, causality: climatic perturbation as revelatory; the politics of weather/climate control; and nineteenth–twentieth-century theories of environmental determinism. Section IV, history and culture: explaining differences among people in terms of differences in climate; and western vs. non-western views of climate. Section V, knowledge: folk knowledge of climate; and local views of climatic perturbation and change. Section VI, politics: climatic change and perturbation in national politics; and contesting global views of climate change. The goal of the course is to clarify the historical, cultural, and political drivers of climate change debates and discourses. Enrollment capped. 3 Course cr

ENV 884a, Industrial Ecology

Industrial ecology studies (1) the flows of materials and energy in industrial and consumer activities, (2) the effects of these flows on the environment, and (3) the influences of economic, political, regulatory, and social factors on the flow, use, and transformation of resources (White 1994). The goals of the course are to define and describe industrial ecology; to demonstrate the relationships among production, consumption, sustainability, and industrial ecology in diverse settings and at multiple scales; to show how industrial ecology serves as a framework for the consideration of environmental and sustainability-related aspects of science, technology, and policy; and to define and describe tools, applications, and implications of industrial ecology. 3 Course cr

ENV 893b, Principles of Risk Assessment

This course introduces students to the nomenclature, concepts, and basic skills of quantitative risk assessment (QRA). The goal is to provide an understanding necessary to read and critically evaluate and perform QRA. Emphasis is on the intellectual and conceptual basis of risk assessment, particularly its dependence on toxicology, epidemiology, and exposure assessment. Quantitation of exposure and dose response provides practical skills and theoretical background, although not detailed in mathematical and model derivations. Specific cases consider the use of risk assessment for setting occupational exposure limits, establishing community exposure limits, and quantifying the hazards of environmental exposures to chemicals in air, drinking water, consumer products, and the built environment. 3 Course cr

ENV 894a, Green Building: Issues and Perspectives

Buildings have an outsized impact on human and environmental health. The Building Sector is the largest contributor to greenhouse gas emissions globally, responsible for almost 40 percent of total emissions. Construction and demolition activities generated 600 million tons of waste in 2018 in the United States, more than twice what was generated in municipal solid waste. Buildings represent an enormous opportunity to reduce environmental impact, and the movement that represents this approach is commonly called green building. But green building is broad and deep – involving process, products, and policy – and crisscrosses many disciplines. This course examines green building from a variety of perspectives, placing it in a technical, social, financial, and historical context. The task of reducing the environmental impact of our buildings requires cross-disciplinary integration and touches nearly every aspect of our lives as

occupants and managers of interior spaces. Individual topics in green building—such as building science, indoor environmental quality, innovative finance, and public- and private-sector programs—are covered through research, class discussion, guest lectures, field trips, and group projects. Great emphasis is placed on the practical challenges and opportunities that green building presents to building and non-building professionals working together to design, specify, construct, operate, renovate, and finance our nation's buildings. Enrollment limited to fifteen. 3 Course cr

ENV 896b, Public Health Toxicology

This course is designed to serve as a foundation for understanding public health toxicology in the twenty-first century. Although it includes the basic principles of toxicology such as dose response and mechanisms of toxicity and cellular defense, this course introduces new concepts of toxicology such as lifetime exposures, low-level exposure to mixtures, high-throughput screening and computational toxicology, and green chemistry in order to understand fundamental interactions between chemicals and biological systems and possible health outcomes. Through the use of case studies and up-to-date published research, the course provides insights into prevention of mortality and morbidity resulting from environmental exposure to toxic substances, the next-generation risk assessment and regulatory toxicology, and the causes underlying the variability in susceptibility of people to chemicals. 3 Course cr

ENV 897b, Environmental and Occupational Exposure Science

This course examines the fundamental and practical aspects of assessing exposures to environmental agents, broadly defined, in the residential, ambient, and workplace environments. The course provides the knowledge and skills to design and conduct exposure assessments, and has a particular focus on applications to environmental epidemiology and risk assessment. Indirect and direct methods of assessing exposures, such as questionnaires, environmental sampling, biological monitoring, and spatial modeling, are reviewed; and case studies and hands-on projects are presented. 3 Course cr

ENV 900a, Doctoral Student Seminar and Responsible Conduct of Research

This course provides the foundation for doctoral study at the School of the Environment. Students learn what it means to do scholarly research as well as become adept with philosophy of science and research methodology and proposal writing, as a basis for exploring diverse approaches to formulating and addressing research questions. Students work with their advisers to put these concepts and principles into practice to develop the basis for their dissertation research (including building bibliography, identifying and crafting research questions, formulating research hypotheses, and drafting a research proposal). Students further learn about funding opportunities and procedures for submitting grants. The course also covers professional ethics and responsible conduct of research, including ethical approaches to inquiry and measurement, data acquisition and management, authorship and publication, peer review, conflicts of interest, mentoring, collaborative research, and animal and human subjects research. Finally, the course explores ethical ways to advocate for the application of scholarly knowledge in the interest of environmental problem solving. Weekly assigned readings support concepts and issues addressed in class. Students present their embryonic research ideas in class and use feedback from the group to further develop their ideas.

ENV 902a or b, Environmental Anthropology Research Lab

A biweekly seminar for Dove doctoral advisees and students in the combined YSE/Anthropology doctoral program. Presentation and discussion of grant proposals, dissertation prospectuses, and dissertation chapters; trial runs of conference presentations and job talks; discussion of comprehensive exams, grantsmanship, fieldwork, data analysis, writing and publishing, and the job search; and collaborative writing and publishing projects.

ENV 905a, Doctoral Seminar in Environmental and Energy Economics

This course is designed to bring doctoral students up to speed on the latest developments in the literature on environmental and energy economics. Key papers are presented, and associated mathematical and empirical methods are covered. Topics include uncertainty and climate change policy, estimating energy demand, electricity markets, and behavioral economics and the environment. A focus is on identifying areas that deserve future research attention. Open to advanced master's students with permission of the instructor. 3 Course cr

ENV 907a, Justice, Equity, Diversity, and Sustainable Laboratory Seminar

This course is only open to graduate students. The course examines food insecurity; inequities in access to fresh, healthy, and affordable foods; and disparate impacts arising from exposure to environmental hazards. Students also examine issues such as energy and health justice, as well as the distribution of and access to environmental amenities such as parks and open space. 3 Course cr

ENV 910b, Survival Skills for Finishing Doctoral Students

This course is aimed at preparing advanced doctoral students for successful and rewarding careers in ecology and environmental science. Students learn about academic and non-academic careers from readings of and presentations by scientists in those positions. Students identify important steps toward planning and launching their career paths, and skills for being effective in these positions; and they develop their own career plan, curriculum vitae, teaching and research plans, and critiques of professional webpages. Finally, the course exposes students to resources and opportunities for continuing to apply and polish their skills. Pass/Fail.

ENV 954a, Management Plans for Protected Areas

A seminar that comprises the documentation of land use history and zoning, mapping and interpretation, and the collection and analysis of socioeconomic, biological, and physical information for the construction of management plans. Plans are constructed for private smallholders within the Quiet Corner Initiative partnership managed by the Yale School Forests. In the past, plans have been completed for the Nature Conservancy; Massachusetts Trustees of Reservations; town land trusts; city parks and woodlands of New Haven, New York, and Boston; and the Appalachian Mountain Club. Ten days fieldwork. Enrollment limited to twenty. Must also register for ENV 957, Field Skills in Land Stewardship. Prerequisite: ENV 659 or permission of the instructor. 3 Course cr

ENV 957a, Field Skills in Land Stewardship

An intensive technical and field ecology seminar that is taught in combination with ENV 954. In this course students learn field skills that contribute to the base set of information used in assessment, planning, prescription writing, and management of forest and open space. Students learn to identify plants; interpret surficial geology,

soils, and hydrology; and read the land for use history. Assessments learned in a series of field exercises comprise forest health and invasive surveys, wildlife habitat evaluations, and soil surveys and wetland delineation. This culminates in understanding and developing a site classification. Lastly, students learn field inventory and sampling techniques in data collection for soils, geology, plants, and wildlife habitat. 3 Course cr

ENV 959a or b, Clinic in Climate Justice, Law, and Public Health

This course is an innovative collaboration between Yale School of Public Health and Vermont Law School and includes faculty and students from both Yale and Vermont Law School. In the course, interdisciplinary student teams carry out applied projects at the intersection of climate justice, law and public policy, and public health. Each team works with a partner organization (e.g., state agency, community organization, other nongovernmental organization) to study, design, and implement a project, typically through community-based participatory research practices. The course affords the opportunity to have a real-world impact by applying concepts and competencies learned in the classroom. Class sessions and team meetings are conducted using a hybrid approach that combines in-person, all-virtual, and virtually connected classroom arrangements. This course should be of interest to graduate and professional students across the University and is open to Yale College juniors and seniors. In addition, this course is one of the options available to students to fulfill the practice requirement for the M.P.H. degree at YSPH and the capstone requirement for the M.E.M. degree at YSE. Students who plan to enroll must complete an application, which will be used to match each student with a clinic project. Check the course's Canvas site or contact the Yale instructor at laura.bozzi@yale.edu for more information. Prerequisite: EHS 547 or permission of the instructor. 3 Course cr

ENV 962a or b, Tribal Resources and Sovereignty-Clinic

Understanding Tribal Resource Management: we identify and describe the varieties of tribal resources and the limitation of the management prerogatives facing Tribal Nations under the current legal regime. We explore those resources governed by the trust duty and the federal government's role. We also look at the emerging resources in the green economy and investigate the relations between tribes, states, and private actors. Co-management, the trust duty, and tribal sovereignty are the main themes around which the clinic is structured. Application required. 3 Course cr

ENV 970a or b, Environmental Protection Clinic: Policy and Advocacy

The clinic's mission is to train students in environmental advocacy through skills-based seminars, interdisciplinary project work, and collaboration with the Natural Resources Defense Council and other significant environmental organizations. Students are assigned to teams of two-to-four members drawn from both the Law School and the School of the Environment. Teams work on a project developed in collaboration with client organizations, with most projects having both legal and policy components. In addition to covering substantive areas of environmental law, clinic seminars help students master the tools of effective environmental advocacy, including the abilities to research law and science, write and cite persuasively, navigate environmental organizations, and manage projects cooperatively. Enrollment limited. For all questions, please email Sam Whillans at swhillans@nrdc.org. Note: Attendance at the first class meeting is mandatory for admitted students and for those on the waiting list who wish to remain in consideration for admission if a place becomes available.

Admitted students must confirm their participation in advance of the first class by a date designated by the instructors. A no-drop policy applies. Course Bidding: Students in the School of the Environment (and students from any other school besides Yale Law School) must complete the Clinic's Bidding Form by 5 p.m. on June 30. 3 Course cr

ENV 971b, Land Use Clinic

Land use control exercised by state and local governments determines where development occurs on the American landscape, the preservation of natural resources, the emission of greenhouse gases, the conservation of energy, and the shape and livability of cities and towns. The exercise of legal authority to plan and regulate the development and conservation of privately owned land plays a key role in meeting the needs of the nation's growing population for equitable housing, energy, and nonresidential development as well as ensuring that critical environmental functions are protected from the adverse impacts of land development. This course explores the multifaceted discipline of land use and urban planning and their associated ecological implications. Numerous land use strategies are discussed, including identifying and defining climate change mitigation and adaptation strategies, including affordable housing, community revitalization, energy development and siting, equitable community engagement, transit-oriented development, building and neighborhood energy conservation, distressed building remediation, jobs and housing balance, coastal resiliency, and biological carbon sequestration. The course also explores how recent events impact these planning issues. The focus is on exposing students to the basics of land use and urban planning, especially in the United States but also internationally, and serving as an introduction for a YSE curricular concentration in land use. Guest speakers are professionals involved in sustainable development, land conservation, smart growth, renewable energy, and climate change management. 3 Course cr

ENV 972a or b, Advanced Environmental Protection Clinic

Open only to students who have successfully completed the Environmental Protection Clinic (ENV 970). No statement of interest required. Attendance at clinic seminar is optional. For all questions, please email Alison Gocke (alison.gocke@yale.edu). Permission of the instructor required.

ENV 980a, Social Justice in the Global Food System Capstone

This course examines social and environmental justice dimensions of today's globalized food system. Using a critical participatory action research (cPAR) approach, we connect theory to practice through a project with partnering community food and justice organizations. Seminar discussions explore topics connected to the course project including: food sovereignty, agroecology, Black agrarianism, migration/immigration, and the Right to Food; the relevance of structural violence to food system inequities; and how land grabbing or food insecurity are connected to relative power on the global stage. Project work is grounded in understandings developed in the seminar, and involves research or practice projects designed in collaboration with partner groups (e.g., community-based non-profits; alliance organizations). Students develop competencies in analyzing global food systems phenomena through justice frameworks; contributing to the work of community-based initiatives; and working in diverse settings on food and environmental issues, as practice for management, leadership, policymaking, collaborative/action research, or other professional roles. Yale School of the Environment students may count the course toward the MEM capstone requirement, as an elective in the "People, Equity, and Environment" specialization, or

as a general elective. Students may enroll without counting the course toward the YSE capstone requirement. The course is also open to students from across the University, including Yale School of Public Health, Yale School of Management; and to Yale College seniors, upon application. 3 Course cr

ENV 985b, Capstone: Neighborhood Planning Workshop

This capstone workshop provides an opportunity for students to apply the theory of practice developed in ENV 817 (or comparable study/experience) to a real-world, local urban planning project as part of an interdisciplinary student team. Up to two teams of up to six students each work together, for a client, to develop a strategy for a neighborhood in New Haven or its environs. The emphasis in each neighborhood is on identifying and overcoming the tensions and conflicts between economic, social, and environmental objectives to develop a balanced strategy for each neighborhood that meets stakeholders' goals while acknowledging the context of overarching regional, national, and global challenges and opportunities (e.g., climate change, demographic shifts). Toward that end, students are exposed to the detailed processes of local government as well as techniques used by city planners to collect and assess data and combine those quantitative tools with stakeholder engagement to develop strategies to achieve community vision. With a focus on interdisciplinary problem solving and the collective project management resulting in a client-driven work product, students learn valuable skills for their future careers. 3 Course cr

ENV 999a or b, Directed Research-Doctoral Staff

Modules

ENV 001a, Urban Ecosystem Analysis

The goal of this module is to acquaint students with field skills for characterizing and understanding urban ecosystems. It is designed to complement the Yale Myers module, which uses an ecosystem framework and examines comparatively undisturbed systems. In contrast, the urban module explicitly considers how the actions of humans and the existence of the built environment alter ecosystem structure and function. Throughout this module, students also gain a better understanding of the New Haven community, including its resources, history, and challenges. At the same time this module is an opportunity to explore themes and techniques that are especially well suited for human-dominated environments. An emphasis is also placed on qualitative methods and social science research, to complement quantitative methods highlighted at Yale Myers. 0 Course cr

ENV 002a, People and Pathways

In this module, students explore the breadth and dimensions of our diverse perspectives and backgrounds, the flows of energy and food in our economy, and how personal and societal forces shape the development of our communities. Students begin by exploring how we value, produce, and consume energy and food. We examine our own perspectives and environmental footprints, explore the theory and physical realities in energy and food systems, and begin identifying key questions on how to reimagine and adapt these systems toward a sustainable future. We explore the dimensions of these issues through interactive workshops at Yale, lectures from faculty and state leaders, and site visits to better understand the communities, infrastructure, and systems upon which we all depend. 0 Course cr

ENV 003a, Ecosystem Science

In their book on the fundamentals of ecosystem science, Weathers et al. (2013) start by introducing the idea that humans have devised many intellectual systems to understand and manage the complicated world in which we live, from physics to philosophy to economics. One such intellectual system is ecosystem science. It is a science that tries to make sense of the complex natural world and help us to better manage it. Ecosystems can be highly varied in size and character, from a little pool of water in a tree cavity, to a redwood forest, to a neighborhood in a city, to a frigid river, to the entire globe. Nevertheless, a common set of tools and ideas can be used to analyze and understand these varied and complicated systems. The results of these analyses are both intellectually satisfying and useful in managing our planet for the benefit of humankind and nature. Indeed, because of the growing demands placed on living and nonliving resources by humans, it could be argued that ecosystem science is one of the essential core disciplines needed to understand and manage the modern planet Earth. The overarching objective of this module is to explore the ecosystem framework for sustainable resource science, assessment, and management. o Course cr

THE FOREST SCHOOL

The Forest School at the Yale School of the Environment is the oldest continuous professional graduate forestry school in the nation. For over 120 years, Yale's forestry program has been at the forefront of developing approaches to the practice of forestry, generating knowledge about forests, and promoting the values forests bring to people's livelihoods and well-being.

Forestry has been at the heart of the School since its inception in 1900, when it was founded as The Yale Forest School by Gifford Pinchot and Henry S. Graves, with founding gifts from both individuals and the Pinchot family. From the beginning, The Yale Forest School has found its home in Marsh Hall at the top of Science Hill. During its first four decades, the School graduated the first four chiefs of the U.S. Forest Service; created the first field experience for incoming students (MODs) at Grey Towers, the Pinchot family home in Milford, Pennsylvania; and was gifted its first research and demonstration forest in 1908, which now comprises six forests that cover over 11,000 acres combined. In 1921, the School changed its name to the Yale School of Forestry, a name that changed again in 1972 to the Yale School of Forestry & Environmental Studies. In July 2020, the name changed to the Yale School of the Environment; at the same time, the School established The Forest School at the Yale School of the Environment in recognition of the School's founding mission and the continued importance of forestry.

VISION AND MISSION

After its establishment, The Forest School approved its Vision and Mission to guide the School into the future.

Vision

We seek to lead in advancing science and educating professionals to develop collaborative research, policy, and practice that address vital and compelling issues facing forests and people globally. We strive to do so justly and equitably, elevating a diversity of voices, and in respectful relationships with the land and one another.

Mission

Rooted in place-based experiential learning and rigorous research, The Forest School within the Yale School of the Environment educates scientists and practitioners to apply forest ecology and social dynamics in their work around the globe. We are a hub for connecting forests and people across disciplines, cultivating collaborations, initiatives, and research that underscore the importance of forests within the broader environmental field. As a school community, we train leaders in the field to be systems thinkers with dynamic and adaptive expertise, developing sustainable solutions for the critical challenges of our time.

The Forest School is guided by two bodies. The Management Team is composed of core staff and faculty, as well as leaders from affiliated YSE centers, programs, and initiatives. These individuals are committed to setting up processes for The Forest School, managing the forestry curriculum, collectively enacting the vision and mission,

and strategic decision-making regarding academics, research, centers, programs, and initiatives, and programming and initiatives of the School.

The Governance Group provides guidance and advice into the strategic actions and goals of The Forest School. Members of the Management Team sit on the Governance Group, in addition to broader YSE faculty and representatives from key YSE Offices including Academic Affairs, Admissions, Career Development, Communications, the Dean's Office, Development and Alumni Services, and Strategic Initiatives.

FOREST-RELATED EDUCATION AND YSE COMMUNITY ENGAGEMENT

The Forest School has a dedicated core faculty, including twelve endowed professorships committed to forestry in perpetuity. TFS also prescribes the curricula of the forestry degrees granted by YSE, including a Master of Forestry (MF), which is accredited by the Society of American Foresters and is intended for students wishing to pursue professional careers in the management and policy of forest resources, and a Master of Forest Science (MFS), which is designed for students wishing to conduct scientific research that contributes toward basic and applied knowledge. Doctoral degrees are managed by YSE, though doctoral students work with TFS-related faculty on cutting-edge forest related research in a five-year, fully funded program.

Our education and training activities are rooted in place-based knowledge of the U.S. Northeast – centering applied forest ecology and social sciences – with a global scope spanning a spectrum of forest landscapes and societies. The Forest School offers numerous experiential learning opportunities for students, including field trips, stakeholder and community engagement, on-the-ground research at multiple local and international sites, and a summer forest apprenticeship. The summer apprenticeship, known as Forest Crew, is a twelve-week program held each summer at Yale-Myers Forest that trains students in forest management and land stewardship. TFS also offers an urban apprenticeship program through the Urban Resources Initiative's GreenSkills program where students help plant trees and care for New Haven's urban forests.

TFS also manages Yale Forests, which are used for teaching and training. Yale Forests cover nearly 11,000 acres in seven separate forests across New England, providing educational and research opportunities focusing on science-based management to promote ecological regeneration. At 7,840 acres, Yale-Myers is the largest of the seven School-managed forests and the single largest piece of property used for educational purposes by Yale University.

TFS also serves as a hub for researchers and practitioners in forest-related fields worldwide, bringing together the best science and practices to find solutions to the challenges that face the world's forests and people today. The School's cross-disciplinary research informs the practices and solutions collaboratively developed for students, faculty, and centers, programs, and initiatives. Programs for practitioners, land stewards, and YSE students are offered through the centers, programs, and initiatives that call The Forest School home, including the Environmental Leadership & Training Initiative (ELTI), The Forests Dialogue (TFD), Tropical Resources Institute (TRI), Urban Resources Initiative (URI), and Yale Applied Science Synthesis Program (YASSP).

The Yale Forest Forum

The Yale Forest Forum (YFF), founded in 1994, is the convening body and the events hub of The Forest School serving as an outreach arm to the world. YFF serves as a forum for engagement, learning, and discussion on the most pressing topics and challenges related to forests and forest landscapes today. This past year alone, YFF has hosted the largest virtual events in Yale's history; in collaboration with Orion Magazine, Yale Forum on Religion and Ecology, and Yale Environmental Humanities, TFS hosted a three-part author speaker series exploring environmental humanities, nature writing, and human relationships with forests.

The YFF guest speaker series is the longest continuously running speaker series at the Yale School of the Environment. Participants come from a wide range of organizations and perspectives, including government, NGOs and businesses, working at scales from local to international. YFF has transformed the speaker series into semester-long themed webinars that are accessible to all; this past year's topics included: Theory to Practice of Urban Forest Management; The Future of Forest Products in a Changing Climate: Bioenergy from Forests; and The Future of Wood Building Products in a Changing Climate. Next fall, YFF will host two webinar series on planted forests and carbon credits. Learnings from these series are published in the *YFF Review*.

Student Interest Groups

Student Interest Groups (SIGs) also have long history and relationship with The Forest School. Yale's chapter of the International Society of Tropical Foresters was first founded in 1989 as part of a global network of forestry and natural resource practitioners and professionals focused in the tropics. Highlighting the intersectionality of tropical forestry, students across disciplines, programs, and degrees participate in the group. Yale ISTF is best known for its annual conference, which is the longest running student-organized conference at Yale. This past year, the ISTF conference was held online, themed Rethinking Restoration and Recovery: Landscapes of the Past, Present, and Future in the Tropics. Yale ISTF has also served as a hub for the global ISTF network, which dissolved in the 1990s but is now reforming in part based on the Yale chapter's enduring model. The Yale Temperate Foresters (YTF) includes Yale student members of the Society of American Foresters, the Forest Stewards Guild, and other professional associations focused on North America's temperate forests. YTF serves as a hub for forest-focused students, with longstanding traditions of attending the Society of American Foresters annual national convention, holiday tree harvesting from Yale-Myers Forest, and social events.

Other affiliated YSE centers, programs, and initiatives include:

Environmental Leadership & Training Initiative Born out of The Forest School, ELTI empowers people to design and implement land use practices that conserve and restore tropical forests and native tree cover in human-dominated landscapes.

Forest Fellows Program The Forest School is home to a cohort of postgraduate forestry students who continue their learning and training through short-term fellowships and receive mentorship from staff and faculty. This program further allows graduates to refine their skills and enter the job market with enhanced experience.

The Forests Dialogue TFD provides international leaders in the forest sector with an ongoing, multi-stakeholder dialogue platform and process focused on developing mutual trust, shared understanding, and collaborative solutions for sustainable forest management and conservation.

Tropical Resources Institute TRI supports interdisciplinary, problem-oriented masters and doctoral student research on the most complex challenges confronting the conservation and management of tropical environments and natural resources worldwide.

Urban Resources Initiative Recognized for tree planting and greenspace restoration, URI is a nonprofit and a program of The Forest School dedicated to community forestry, environmental education, and training and capacity building activities in New Haven.

Yale Applied Science Synthesis Program Centered on generating science to support decision making, YASSP is a new program that produces quantitative, reputable, scientific syntheses that guide and inform land management for pragmatic stewardship of forest and agricultural lands.

Yale Forests Yale Forests is The Forest School's home for teaching, learning, and researching in the field. The Yale Forests cover nearly 11,000 acres in 7 forests across the U.S. Northeast. In addition to providing educational and research opportunities, we use science-based management to promote the ecological regeneration of the areas of the forests that are harvested for timber to balance conservation, research, and harvesting goals over the long-term. Special programs of Yale Forests include the Quiet Corner Initiative, Maple Education & Extension Program, and Northeast Forest Farmers Coalition.

CENTERS AND PROGRAMS AT THE SCHOOL OF THE ENVIRONMENT

Teaching, research, and outreach at the Yale School of the Environment are greatly enhanced by the centers and programs that have been initiated by faculty over the years. The centers and programs, each with a different concentration, are a key component of a student's learning experience. They allow students to gain hands-on clinical and research experience through funded student internships and projects, coordination of faculty research in areas of common interest, and creation of symposia, conferences, newsletters, and outreach programs.

Centers and programs are funded primarily through private foundations, nongovernmental organizations, state and federal agencies, international granting agencies, and private corporations. The nature and number of centers and programs evolve over time, reflecting faculty and student interest. Under the current organizational structure, each program falls under the umbrella of a center, which enables further collaboration and resource sharing.

Center for Green Chemistry and Green Engineering at Yale

The mission of the Center for Green Chemistry and Green Engineering at Yale is to advance sustainability by catalyzing the effectiveness of the Green Chemistry and Green Engineering community. Green Chemistry and Green Engineering represent the fundamental building blocks of sustainability. Working in these disciplines, chemists and engineers are creating the scientific and technological breakthroughs that will be crucial to the future success of the human economy.

The Center for Green Chemistry and Green Engineering at Yale works to stimulate and accelerate these advances. Guided by four core operating principles – (1) Insist on scientific and technical excellence and rigor, (2) Focus on generating solutions rather than characterizing problems, (3) Work with a diverse group of stakeholders, and (4) Share information and perspectives broadly – we seek to accomplish four key objectives:

- Advance the science
- Prepare the next generation
- Catalyze implementation
- Raise awareness

The center concentrates on five focus areas:

Research The center supports and advances research in Green Chemistry and Green Engineering (GC&GE), a critical component to building the community, designing and discovering innovative solutions, and achieving a sustainable future. The center serves as a catalyst to both Yale and the greater GC&GE communities for discipline-specific and cross-disciplinary research collaborations focused on key areas of GC&GE within science, technology, and policy for sustainability.

Policy and outreach The center engages in policy, communication, and outreach initiatives that raise awareness of – and support for – GC&GE. In this dialogue the center engages with a wide network of stakeholders, including NGOs, industry, academia, and government, as well as local communities and the general public.

Education A robust educational program is an essential element of the center. Center activities are focused on educating undergraduate and graduate students in the principles and practice of GC&GE. The center also serves the wider academic community by providing opportunities for faculty training and by developing and disseminating GC&GE curriculum materials.

International collaborations GC&GE are rapidly spreading through both industrialized nations and the emerging economies. In all regions, the center engages with the network of scientists, engineers, policy makers, business people, and public health and environmental experts focused on sustainability science on behalf of the greater good.

Industrial collaborations GC&GE can only provide meaningful impact on the challenges of global sustainability when implemented on a large scale. For this reason, collaboration with industry is a key part of the center's work. Direct engagement creates a dialogue that informs industry of the latest research breakthroughs in the field of sustainable science and technology. Likewise, such engagement informs academic researchers on industry's most important concerns. This dialogue facilitates a direct line for implementation of these innovations.

Center for Industrial Ecology

The interdisciplinary, international team at the Yale Center for Industrial Ecology (CIE) brings training in the environmental, social, and policy sciences, engineering, and management to the analysis of materials and energy in society. Researchers study stocks, flows, and transformation of physical resources in systems at scales ranging from materials, products, and product life cycles, to factories, cities, countries, and globally. The center is dedicated to the development and promotion of research, teaching, and outreach in industrial ecology. Current topics of interest include:

1. Mapping and analyzing stocks and flows of resources and their associated drivers, costs, and environmental impacts with tools such as material flow analysis (MFA), life-cycle assessment (LCA), and environmentally extended input-output analysis (EEIOA).
2. Uncovering social, industrial, and economic dynamics that shape stocks and flows of materials and energy in the analysis and development of the circular economy, sustainable production and consumption, and industrial symbiosis/closed-loop systems.
3. Developing and analyzing policies and corporate strategy relevant for industrial ecology including extended producer responsibility (EPR) and business models supporting sustainable, resource-efficient outcomes.

Together with the Center for Green Chemistry and Green Engineering, CIE forms a specialization in the master's program as well as a broad learning community.

JOURNAL OF INDUSTRIAL ECOLOGY

CIE is home to a highly regarded international journal. Published by Wiley and owned by Yale University, the *Journal of Industrial Ecology* is a peer-reviewed, online, multidisciplinary, bimonthly publication on industry and the environment that is aimed at both researchers and practitioners in academe, industry, government, and advocacy organizations. It is edited in partnership with Tsinghua University in Beijing, China, and the Norwegian University of Science and Technology in Trondheim, Norway. The *Journal of Industrial Ecology* is indexed in Science Citation Index Expanded and Scopus, and it is the official journal of the International Society for Industrial Ecology. See www.wileyonlinelibrary.com/journal/jie.

INDUSTRIAL ENVIRONMENTAL MANAGEMENT PROGRAM

The Industrial Environmental Management (IEM) program at Yale aims to equip students with an integrated set of skills with which to tackle the complex, multifaceted environmental problems facing industrial and corporate managers. The core intellectual framework for IEM is the systems science of industrial ecology, which examines materials, water, and energy in a common framework. Students can pursue specialization and certification through the M.E.M. program in Industrial Ecology and Green Chemistry.

An active Industrial Environmental Management and Energy Student Interest Group (SIG) sponsors field trips to industrial sites, on-campus talks by visiting managers, and symposia on current topics of interest.

PROGRAM ON SOLID WASTE POLICY

The program has two principal goals: (1) to inform contemporary policy discussions about solid waste, materials management, and the circular economy by applying the methods and findings of industrial ecology and the social and environmental sciences; and (2) to develop workable policy solutions that address the impediments to safe, cost-effective solid waste management and the complexities of comprehensive materials and life-cycle management. Current research focuses on high-resolution mapping of nonhazardous industrial waste to improve the potential for reuse and on policies for extended producer responsibility.

Environmental Leadership and Training Initiative

In April 2006 YSE launched the Environmental Leadership and Training Initiative (ELTI) – <http://elti.yale.edu> – thanks to a generous grant from the Arcadia Fund, a charitable fund of Lisbet Rausing and Peter Baldwin. ELTI's mission is to cultivate the capacity of people from all sectors and backgrounds to restore and conserve tropical forest landscapes using strategies that support biodiversity and livelihoods. Through complementary, applied, and action-oriented training and follow-up leadership support, ELTI strives to accelerate on-the-ground conservation and restoration actions with the people who depend upon and govern tropical forest landscapes. ELTI's training program includes place-based, experiential field courses with partners in five primary countries and online courses based out of YSE for a global audience. To date, ELTI has trained more than 5,000 leaders around the globe through more than 200

training events. The ELTI team has also facilitated 323 events with alumni of ELTI courses, who include farmers, practitioners, and decision makers in tropical forest landscapes, as part of ELTI's effort to facilitate application of knowledge learned.

ELTI's programs are implemented via partnerships with more than 20 organizations located in tropical countries around the globe, including universities, research institutes, government ministries, NGOs, and community organizations. The field programs are anchored in training landscapes with partners in Brazil, Colombia, Panama, Indonesia, and the Philippines, which enable ELTI to offer short courses for different audiences on a range of themes. The online program is global in reach and includes intensive and interactive short courses lasting six to eight weeks, as well as a yearlong certificate program open to a global audience. The field courses are taught in local languages, and several online courses are available in French, Spanish, Portuguese, and Indonesian. YSE faculty participate in teaching ELTI courses, and ELTI's student internship program provides a unique opportunity for YSE students to develop and implement capacity development courses and materials. Students can also take YSE seminars taught by ELTI team members, as well as conduct field research in ELTI's training landscapes on natural and social science themes.

Hixon Center for Urban Ecology

The Hixon Center for Urban Ecology provides an interdisciplinary forum for scholars, students, and practitioners to work collaboratively on integrated research, teaching, and outreach to improve our understanding and management of urban ecosystems within the United States and around the globe.

The ecological health and integrity of urban ecosystems have a profound impact on urban economic productivity and quality of life. Pioneering research, new theoretical understanding, and innovative practice will be required to provide the knowledge and tools necessary to foster healthy natural systems essential for the future well-being of the modern city and the people who live there. This need has never been greater than today, when a majority of the world's population either resides in or is rapidly migrating to urban areas.

To accomplish its mission, the center builds upon and strengthens the work of several programs at the School, including the Urban Resources Initiative.

The Hixon Center has a strong focus on collaboration within the School, across the University, and beyond. The center sponsors lectures and symposia as a means to disseminate ideas about and understanding of the critical issues confronting urban ecosystems.

The Hixon Center also supports students' basic and applied research through fellowships connected to current Hixon Center priorities in the realm of urban ecology. The center will continue to build the urban environmental focus at Yale while strengthening the School's urban dimension, creating new models and approaches for addressing urban environmental challenges.

URBAN RESOURCES INITIATIVE

The Urban Resources Initiative (URI) is a not-for-profit/university partnership dedicated to community participation in urban ecosystem management. A substantial

body of learning recognizes that sustainable urban ecosystem management depends on the meaningful participation of local residents. Those who know local conditions and whose daily actions influence the health and quality of urban ecosystems must play a central role in designing and implementing management strategies. Sustainable natural resource management and conservation cannot be achieved by technical, scientific solutions alone. Conservation efforts, especially in urban areas, must emphasize social revitalization alongside environmental restoration.

Yale's URI program draws on these essential elements to facilitate community participation in urban ecosystem management. "Community" is defined quite broadly. It includes the group of neighborhood leaders with whom interns work to restore lands near their homes. Community is a group of teens who are learning how to assess the tree canopy of their city. Community is the staff and leadership of city agencies who have the responsibility and resources to be environmental stewards of their city. URI's approach responds to and engages all of these communities.

URI offers a number of clinical learning opportunities that allow YSE students to gain real-world practice in their field. Listening to local concerns and developing environmental programs in cooperation with neighborhood groups, NGO partners, schools, and city agencies are the cornerstones of our work. Through these programs YSE students can make a real contribution to the New Haven community while they enrich their academic work by applying theory learned in the classroom with supervised clinical training. These programs include the Community Greenspace program, GreenSkills, environmental education/job training program, research opportunities, and training in urban forestry practices.

Community Greenspace Each summer YSE students work as community foresters as part of the Community Greenspace program, a citywide initiative to revitalize New Haven's neighborhoods by planting trees along streets and in parks, remediating lead from soil in front yards, reclaiming neglected lots, and building community. Each intern works with community groups, which develop restoration goals and design an implementation strategy for the summer. The interns support neighbors in conducting an inventory of existing trees, selecting species, preparing sites for new plantings, and planting perennials, shrubs, and trees.

The Greenspace program is an opportunity for Yale students to learn urban forestry practices. Neighbors initiate the process by identifying their environmental priorities in their community. URI looks to the local experts—the people who live in New Haven neighborhoods—as partners in defining and then assessing, designing, implementing, and sustaining the urban landscape.

Green job training Launched in 2007, URI's GreenSkills program creates an opportunity to address a critical predicament—a growing deficit in and unequal distribution of New Haven's street-tree canopy that can be countered by a green job program bringing together Yale and high school interns. In 2010 the GreenSkills program was expanded to include adults with barriers to employment, particularly those whose life experience includes incarceration. Its goals include increasing New Haven's street-tree canopy by engaging adults and local high school students in tree planting efforts, thereby providing them with paid green job training opportunities.

Each tree planted by URI's GreenSkills team is at the request of a New Haven resident, who commits to the stewardship of the newly planted tree.

The second major activity of URI's GreenSkills program is to optimize green infrastructure solutions to manage stormwater and improve water quality in partnership with the City of New Haven. In New Haven, three rivers flow through densely settled urban areas before draining into New Haven Harbor and Long Island Sound. Large areas of impervious surface and compacted soils lead to significant overland flow of contaminated stormwater. The contamination in the waterways is the direct result of stormwater runoff from the city's impervious surfaces, which overload the city's combined and separate storm sewer systems and eventually discharge into Long Island Sound. Green infrastructure, such as infiltration bioswales, significantly reduces storm flows and improves water quality. URI and EMERGE (a local NGO), in partnership with the City of New Haven, have installed two hundred bioswales to improve stormwater quality and reduce storm flows to separated and combined sewers.

Research URI activities provide valuable research opportunities in community organizing and development, urban forestry management, environmental education, and monitoring and evaluation of community-managed ecosystems. Some examples of past student research activities include a community survey to determine human health impacts of vacant lands; measurement of biological communities found in Greenspace sites and abandoned lots; how community group dynamics affect urban street-tree survival; and measurement of density of street trees per linear mile to reveal tree canopy inequities, which need to be resolved.

Justice, Equity, Diversity, and Sustainability Initiative

The Justice, Equity, Diversity, and Sustainability Initiative (JEDSI) seeks to examine the relationship between social inequalities, lived experiences, and environmental outcomes. To this end, JEDSI currently focuses on six primary areas of research, teaching, and practice:

Environmental history We study environmental history and events from historical and contemporary perspectives. Our work analyzes the contributions of leading figures in the environmental sector. We also bring to the fore people whose voices are often ignored in conservation narratives.

Nature, outdoor experiences, attitudes, and perceptions Our research examines racial, ethnic, gender, and class differences in environmental behavior and in nature and outdoor experiences. We also study environmental attitudes and perceptions.

Environmental inequalities, resilience, and sustainability We theorize about the environmental justice (EJ) movement, engage with EJ activists and communities, and conduct research about historical and contemporary EJ issues. We examine the occurrence of environmental hazards and discriminatory policies and practices, and we document the existence of open space and other amenities in EJ communities. We identify forms of community resilience that can help communities thrive and foster long-term sustainability.

Food and farming: access, sovereignty, and justice We research food systems, food insecurity, access to healthy and affordable foods, food sovereignty, and food justice. We probe discriminatory policies and practices faced by farmers of color and work with small farmers, urban farmers, and community gardeners. We collect data on the types of food outlets in cities and examine the roles that small farmers, farmers' markets, urban farmers, community gardeners, and emergency food assistance organizations play in reducing food insecurity. We also study mechanisms that communities and groups use to enhance food sovereignty.

Institutional diversity, transparency, and workforce dynamics We produce pathbreaking research and publications on diversity in the environmental sector. We study students in environmental programs; the staff, board, and members of environmental institutions; preference to work in green organizations; wages and equity in said organizations; recruitment and retention in the sector; the adoption of diversity measures, and the disclosure of diversity activities in enviros; and leadership in these institutions. Environmental professionals use our work to enhance diversity in environmental organizations and the broader environmental movement.

Diversity pathway programming We operate two pathway programs that moved to Yale from the University of Michigan in fall 2020.

- The Yale Conservation Scholars - Early Leadership Initiative provides one to three summers of internship opportunities to undergraduates who are historically underrepresented in the conservation field. The scholars spend the summer interning in an environmental nonprofit. About a fourth of our program participants pursue graduate degrees.
- The Environmental Fellows Program provides a summer internship to master's and doctoral students who are historically underrepresented in the environmental sector. The fellows participate in internships at environmental grant-making foundations or environmental nonprofits around the country.

JEDSI also organizes the New Horizons in Conservation Conference. This annual national conference is a gathering of students and professionals of color in the environmental field as well as others who are interested in learning more about and advancing diversity practices in their organizations. Almost 900 people from around the world participated in the 2021 conference. The next conference will be held in Spring 2023 in New Haven, CT.

Additionally, JEDSI mentors the students and young professionals in its programs and lab. And it develops profiles of environmental professionals of color who have outstanding careers in the environmental sector. The database contains information on 200 individuals. The profiles, which are available to people seeking mentors, also help students and young professionals understand how senior professionals forge successful careers. For additional information, see <https://jedsi.yale.edu>.

The SEARCH Center: Solutions for Energy, AiR, Climate, and Health

The SEARCH Center (Solutions for Energy, AiR, Climate, and Health), funded by a five-year Air, Climate and Energy (ACE) Center grant from the U.S. Environmental

Protection Agency, aligns cutting-edge scientific research and technology to support the EPA's strategic goals of protecting human health and the environment. Based at Yale University, with major participation by Johns Hopkins University, the SEARCH Center involves more than two-dozen researchers across a number of institutions including North Carolina State University, Stanford University, Northeastern University, University of Chicago, University of Michigan, and the Pacific Northwest National Laboratory.

The center's main objectives are to: (1) investigate energy-related transitions underway across the United States by combining state-of-the-science modeling of energy systems, air quality, climate, and health; (2) characterize factors contributing to emissions, air quality, and health associated with key energy-related transitions in order to understand how these factors affect regional and local differences in air pollution and public health today and in the future; and (3) identify key modifiable factors (e.g., transportation, land use, power generation) and how those factors and their air pollution impacts are likely to change over time. The center has four research projects, two support units, and an administrative core.

- Project 1 (*Modeling Emissions from Energy Transitions*) encompasses economic modeling of national emissions and air quality under different energy policy scenarios.
- Project 2 (*Assessment of Energy-Related Sources, Factors, and Transitions Using Novel High-Resolution Ambient Air Monitoring Networks and Personal Monitors*) measures and examines real-world exposure to air pollution using stationary and personal monitors.
- Project 3 (*Air Quality and Climate Change Modeling*) draws upon projects 1 and 2 to model relationships between air quality, policy, and health under various climate change scenarios using air quality and climate change modeling.
- Project 4 (*Human Health Impacts of Energy Transitions*) estimates the health impacts of various air quality scenarios from the other SEARCH projects and identifies populations most vulnerable to air pollution.
- The Policy and Decision-Making Unit bridges the divide that often separates science and policy through iterative processes bringing SEARCH scientists and real-world policy makers together.
- The Environmental Data Science Unit provides statistical support for all four projects. This unit is developing statistical methods to address the scientific questions of interest and will facilitate integration across different projects. This unit will also encourage reproducible research through dissemination of data and statistical code, where feasible.

The Forests Dialogue

The Forests Dialogue (TFD) was established in 2000 to provide international leaders in the forest sector with an ongoing, multi-stakeholder dialogue platform and process focused on developing mutual trust, a shared understanding, and collaborative solutions to challenges in achieving sustainable forest management and forest conservation around the world. In recent years, TFD has expanded its remit to include all actors across the landscape, not just the forest sector. TFD is an autonomous,

unincorporated organization hosted by Yale University and with a secretariat based at The Forest School at YSE.

The goal of TFD is to reduce conflict among stakeholders over the use and protection of vital forest resources. Since its founding, TFD has brought together more than 3,000 diverse leaders to work through more than twenty compelling forest and landscape sustainability challenges. TFD uses a multi-stakeholder dialogue model to progress from building trust among participants to achieving substantive, tangible outcomes in such a way that participants are committed to advocate for and work to implement those broadly agreed upon outcomes. TFD is currently orienting much of its work to focus on questions related to forests and climate change. Current TFD initiatives include: Climate Positive Forest Products (CPFP), The Land Use Dialogues (LUD), and Tree Plantations in the Landscape (TPL) and Bioenergy from Forests (BEF). Developing initiatives include: Fire and Forests, Forests and Climate Change (FCC), and Forests and Water.

TFD is governed by a steering committee composed of leading individuals representing key forest stakeholders from around the world. TFD hires YSE students as program associates each term to work with the secretariat and steering committee members on all facets of TFD's operations. Duties include background research for the initiatives, communications, secretariat support, dialogue planning, and running the dialogues on location. Students who are interested in forests, climate, and landscape-related issues as well as those who are interested in stakeholder engagement are encouraged to apply to work with TFD.

Tropical Resources Institute

The mission of the Tropical Resources Institute (TRI) is to support interdisciplinary student research on the most complex challenges confronting the conservation and management of tropical environments worldwide. TRI was created in 1983 to strengthen the School's involvement in the study and management of tropical resources. The institute recognizes that the problems surrounding the conservation and management of tropical resources are rapidly increasing in complexity, while demands on those resources continue to grow. Emerging structures of global environmental governance and local conflicts over land use require new strategies and leaders able to function across diverse disciplines and sectors, and at multiple scales. TRI seeks to train students to be leaders in this new era, equipping them with the resources and tools this new generation will require to equitably address the challenges ahead.

TRI serves as the nexus within YSE through which students conduct interdisciplinary research and outreach activities throughout the tropics. Within the broader Yale community, TRI serves as a clearinghouse for research and educational activities pertaining to tropical countries, societies, and environments.

TRI is run by a director, student program assistants, and a faculty steering committee. Its directorship and its student grant program are supported by its own endowments.

Research TRI administers the TRI Fellowship, an endowed fellowship program that supports several dozen master's and doctoral students conducting natural and social science research in the tropics each year. Following the mission of TRI, these research projects are typically interdisciplinary and problem-oriented and cover a wide range

of issues concerning the management and conservation of tropical resources. TRI also administers a small grants program focused on Sri Lanka. More information on both programs can be found at <https://tri.yale.edu>.

Education Throughout the academic year, TRI sponsors workshops, discussions, and speakers that focus on timely conservation and development issues in the global tropics. TRI provides mentoring and training to graduate students in research design, proposal writing, and field methods; after research, it helps them develop articles for *Tropical Resources*, TRI's annual journal of student research.

Outreach TRI supports partnerships with international organizations in many tropical regions in order to create innovative research opportunities for YSE students. TRI works to build networks among scholars and international institutions to facilitate research and the dissemination of knowledge on tropical resource issues. TRI distributes its annual *Bulletin* to an international list of practitioners and academics, and it hosts a website, <https://tri.yale.edu>.

Publications TRI publishes *Tropical Resources: The Bulletin of the Yale Tropical Resources Institute*, an annual journal of student research funded by grants from TRI. This publication is disseminated both internationally and domestically to a list that includes practitioners, academics, and institutions that focus on tropical issues; it can also be read online at <https://tri.yale.edu/tropical-resources>. *Tropical Resources* typically contains articles by a dozen or more students based on a wide range of field research experiences.

Ucross High Plains Stewardship Initiative

The Ucross High Plains Stewardship Initiative (UHPSI) fosters land stewardship and conservation in the American West through teaching, research, and outreach. This is primarily achieved through mentoring students on applied research and management projects in collaboration with Western partners. Research and management projects are diverse and interdisciplinary, and address Western conservation challenges. Our broad network of more than fifty partners comprises ranchers, nonprofits, federal and state agencies, and academics. Students engaged with UHPSI develop knowledge and skills in Western issues and natural resource management on private and public lands through our collaborative, experiential-learning framework.

For more information about UHPSI, visit <https://highplainsstewardship.com/meet>.

Yale Carbon Containment Lab

At the Yale University Carbon Containment Lab (CC Lab), we design, test, and develop novel and neglected, low-cost, safe, scalable, and verifiable methods of atmospheric carbon containment.

We look at both carbon removal and emissions abatement with a goal of scaled implementation. Our goal is to contribute to containing one billion metric tons of CO₂ equivalent (MTCO_{2e}) emissions by 2050, with more short term goals of supporting the annual containment of one million metric tons by 2030.

The CC Lab is led by Executive Director Dean Takahashi, longtime senior director of the Yale Investments Office, along with managing directors Anastasia O'Rourke '09 Ph.D. and Justin Freiberg '10 M.E.Sc.

We focus on approaches that are inspired and supported by natural systems. We do so by designing and testing novel systems and methods, analyzing and measuring methods for carbon containment from a variety of technical, economic, financial, environmental, and social impact perspectives. We also focus on engaging markets, paving the way for financing and deploying innovative carbon containment methods at scale, and with sustainable business models.

The CC Lab portfolio currently includes projects sequestering carbon using geologic storage, capturing fugitive methane emissions, and exploring opportunities for carbon containment in wood biomass. Some are led by the CC Lab team and some by external partners and collaborators across a variety of sectors and specialties. Operating as part of the Yale School of the Environment, the CC Lab draws on the exceptional expertise and skills of Yale University faculty, alumni, students, staff, and other external partners and collaborators. The CC Lab eagerly supports student intern opportunities for both undergraduate and graduate students and encourages students to check the CC Lab's website for current opportunities. Additionally, the CC Lab welcomes opportunities and proposals for collaboration.

Interested in working with us? Send your résumé or proposal to carboncontainment.lab@yale.edu.

Yale Center for Business and the Environment

The Yale Center for Business and the Environment (CBEY) educates and inspires interdisciplinary leaders through business solutions to systemic environmental problems.

CBEY joins the strengths of two world-renowned graduate schools—the Yale School of the Environment (YSE) and the Yale School of Management (SOM)—with a global network of thought leaders and practitioners working at the interface of business and the environment. Home to the oldest and nationally preeminent joint-degree program in business and the environment, CBEY addresses the need for both environmentally-minded business leaders and skilled managers in environmental organizations.

We're aware that systemic change takes time, so we engage in a wide range of activities to train business and environment leaders of tomorrow and address pressing global resource issues through three main avenues:

1. **Education:** Applied learning programs that stretch student experience at the intersection of environmental science, management, and business innovation
2. **Research and Insights:** Opportunities for collaborations between industry leaders, students, and faculty to conduct deep analysis and develop applied, immediate, and impactful solutions to sustainability challenges
3. **Outreach:** Connecting leading companies, NGOs, and policymakers with extensive networks of sustainability professionals, students, and faculty

To learn more, visit <http://cbey.yale.edu>.

Yale Center for Environmental Communication

The Yale Center for Environmental Communication (YCEC) conducts research on the psychological, cultural, and political factors that influence environmental attitudes and behavior; teaches students and trains working professionals; informs and engages the public through environmental journalism; and supports a global network of organizations seeking to build public and political will for environmental solutions.

Research The YCEC conducts world-class research on climate change and environmental communication. Research results are published in public reports, interactive maps, and scientific articles and are shared via public presentations and private briefings. The findings are used by hundreds of news organizations, including CBS, ABC, NBC, CNN, the *New York Times*, *Washington Post*, Associated Press, the *Guardian*, Xinhua, and many others.

Teaching and training The YCEC provides courses in environmental communication for Yale graduate and undergraduate students and training programs for working environmental professionals.

Environmental journalism The YCEC informs and engages the public in environmental science and solutions through several environmental journalism initiatives, including *Yale Environment 360*, *Yale Climate Connections*, the Environmental Film Festival at Yale, *Sage Magazine*, and the *Yale Environmental Review*.

Supporting a global network of environmental communicators The YCEC organizes national and international meetings, conferences, and events to convene climate change and environmental leaders and supports a global network of environmental communication scholars and practitioners.

Yale Center for Environmental Justice

The Yale Center for Environmental Justice (YCEJ) is a joint undertaking between Yale School of the Environment and Yale Law School committed to strengthening institutional capacity to empower frontline communities to lead change by catalyzing partnerships and expanding interdisciplinary research, teaching, and practice in environmental justice. In addition, YCEJ promotes an expanded definition of environmental justice, recognizing the lived experiences and interconnected systemic inequities that shape environmental inequality.

The center promotes different environmental justice initiatives at Yale through partnerships, programs, outreach, and convening. YCEJ hosts several events throughout the year including the Global Environmental Justice Conference, an annual gathering that brings together scholars, practitioners, and activists from around the world and across disciplines to discuss how scholarship, social justice, and environmental management can be effectively integrated.

Yale Center for Environmental Law & Policy

The Yale Center for Environmental Law & Policy, a joint undertaking between Yale Law School and the Yale School of the Environment, seeks to advance fresh thinking and analytically rigorous approaches to environmental decision-making across

disciplines, sectors, and scales. In addition to its research activities, the center aims to foster discussion and collaboration across the Yale campus on environmental law and policy issues at the local, regional, national, and global levels. Current projects include the biennial Environmental Performance Index (<https://epi.yale.edu>), which ranks countries on their sustainability performance across eleven policy categories covering both environmental public health and ecosystem vitality; the Global Commons Stewardship Index, which ranks countries based on their impact on the shared resources of the Global Commons; the Yale Initiative on Sustainable Finance (<https://cbey.yale.edu/yale-initiative-on-sustainable-finance-yisf>); and Remaking the Global Trading System for a Sustainable Future. Additional research themes include: sustainable investing and ESG reporting, corporate sustainability metrics, rethinking environmental protection for the twenty-first century, corporate sustainability strategy, and global governance. The center also plays a role in leading a major YSE initiative, Yale Environmental Dialogue, which aims to promote conversations on challenging sustainability issues with a goal of bridging political divides. For additional information, please visit <https://envirocenter.yale.edu>.

Yale Forest Forum

The Yale Forest Forum (YFF) was established in 1994 by Professor John Gordon along with other faculty members at Yale to engage a diverse group of leaders in forestry and forest policy and management in the United States. The group's initial work was to convene the Seventh American Forest Congress to collaboratively develop and articulate a common vision and set of next steps for the future of U.S. forests with over 5,000 stakeholders across the country.

The YFF now serves as the special events hub of The Forest School at the Yale School of the Environment. YFF offers two seminar series each semester during the academic year, providing opportunities to hear from leaders in forest management, conservation, or policy in an informal setting. The weekly seminar speaker series, offered every Tuesday and Thursday of the academic year, are open to all in the YSE community in person as well as the general public virtually. Public presentations are followed by a private discussion with guest speakers and students enrolled in the seminar. YFF also offers and supports other engaging forest-related events in collaboration with individuals and organizations throughout YSE. Those interested in attending can follow the schedule of events on the YFF website and YSE calendar.

Yale Forum on Religion and Ecology

The Yale Forum on Religion and Ecology is an international, multireligious project contributing to a new academic field and an engaged moral force of religious environmentalism. With its conferences, publications, monthly newsletter, and website, it explores religious worldviews, texts, and ethics in order to broaden understanding of the complex nature of current environmental concerns. The forum recognizes that religions need to be in dialogue with disciplines such as science, economics, law, and policy in seeking comprehensive solutions to both global and local environmental problems. The co-founders and co-directors of the forum are John Grim and Mary Evelyn Tucker.

The forum arose from a series of ten conferences on World Religions and Ecology organized by Tucker and Grim at Harvard from 1996 to 1998. They were the series editors for ten volumes from Harvard University Press (1997–2004) that resulted from the conferences.

Since its creation, the forum—which has been based at Yale since 2006—has played an active role in promoting the study of religion and ecology as an emerging field of study and an ethical force for ecojustice. Courses are now taught at colleges and high schools across North America and in Europe, Canada, and Australia. Moreover, a new movement of religious environmentalism is growing in churches, synagogues, temples, and mosques around the world. Now every major religion has statements on the importance of ecological protection and ecojustice. With its many advisers and partners, the Yale Forum on Religion and Ecology has played an active role in these developments. It has formed a special partnership with the United Nations Environment Programme Faith for Earth Initiative.

The forum's website (<https://fore.yale.edu>), hosted at YSE, is the premier site for research, education, engagement, and outreach in the field of religion and ecology. The website contains information and statements on the world's religions and their ecological contributions. The site highlights news, events, books, and articles related to world religions and ecology as well as grassroots projects. The site also highlights Forum Spotlights (a video and podcast series of interviews with scholars and other figures doing work related to religion and ecology) and a blog with features on topics of interest to the field. Website highlights are also featured in a monthly email newsletter distributed to about 12,000 people. The website hosts a fully searchable and filterable database of engaged faith-based projects that address the United Nations Sustainability Development Goals. This project was completed in conjunction with the U.N. Environment Programme (UNEP), Parliament of the World's Religions, United Religions Initiative, and the Bhumi Project. Projects will continue to be added to the site on a quarterly basis.

The work of the forum includes:

Joint master's degree program at Yale The Yale School of the Environment (YSE) and Yale Divinity School (YDS) offer a joint master's degree program in religion and ecology—the first of its kind in North America. It is aimed at students who wish to integrate the study of environmental issues and religious communities in their professional careers and at those who wish to study the cultural and ethical dimensions of environmental problems. The joint degree is supported by co-appointed faculty and by the forum. Beginning in 2017, the program has hosted a graduate student-led conference on religion and ecology each spring.

Massive Open Online Courses (MOOCs) A series of courses, *Religions and Ecology: Restoring the Earth Community*, was released on Yale/Coursera in 2021. The series includes an introduction to the topic as well as studies in indigenous religions, Western religions, and Asian religions.

Publications The forum has helped to create a new field of research and teaching in religion and ecology that has implications for environmental policy. Recent publications include:

- *Ecology and Religion*, by John Grim and Mary Evelyn Tucker, in a YSE series from Island Press (2014).
- A number of volumes by the late cultural historian Thomas Berry, most recently: *Selected Writings* (Orbis Books, 2014), *The Sacred Universe* (Columbia University Press, 2009), *The Christian Future and the Fate of Earth* (Orbis Books, 2009), and *Evening Thoughts* (University of California Press, 2006), all edited by Tucker and Grim.
- *The Routledge Handbook of Religion and Ecology*, edited by Willis Jenkins, Tucker, and Grim (2016).
- The first biography of Thomas Berry, by Tucker, Grim, and Andrew Angyal (Columbia University Press, 2019).

In addition, the forum has supported the first journal in the field, *Worldviews: Global Religions, Culture, and Ecology*, and Tucker and Grim have served on the editorial board since its founding in 1997. They have also served, with Leonardo Boff and Sean McDonagh, as advisers for the twenty-volume *Ecology and Justice* series from Orbis Books.

Conferences The forum has organized and cosponsored many conferences, including the Thomas Berry Award and Lecture, which has run since 1998. Others include:

- “Renewing Hope: Pathways of Grassroots Religious Environmentalism” (YSE and YDS, 2007, to celebrate the film *Renewal*).
- Yale Forum on Religion and Ecology’s 10th Anniversary Symposium (Yale Club of New York, 2008).
- Thomas Berry Memorial (Cathedral of St. John the Divine, New York, 2009).
- “Environmental Dis/locations: Environmental Justice and Climate Change” (YSE and YDS, 2010).
- With YSE and TERI University, an interdisciplinary workshop focused on the Yamuna River (Delhi and Vrindavan, India, 2011).
- Interdisciplinary conference for the premiere of the film *Journey of the Universe* (YSE and YDS, 2011).
- “Religion and Environmental Stewardship” (YSE and YDS, 2012).
- “Religion and Ecology and Our Planetary Future” (Harvard Center for the Study of World Religions, 2016, celebrating the twentieth anniversary of the Harvard conferences).
- “Living Earth Community: Ways of Being and Knowing the World” (Oak Spring Garden Foundation, Virginia, 2018, with former YSE Dean, Peter Crane).
- With University of Connecticut: “Abrahamic Traditions and Environmental Change” (Rhodes, Greece, 2019).
- With Georgetown University: “Thomas Berry and ‘The Great Work’” (Georgetown University, 2019).

In addition, the forum participates in interdisciplinary conferences worldwide, including conferences with the United Nations Environment Programme (UNEP); United Nations Educational, Scientific and Cultural Organization (UNESCO); the International Union for Conservation of Nature (IUCN); the Dialogue of Civilizations; the Earth Dialogues led by Gorbachev; the Earth Charter; the Religion, Science and the

Environment Symposia, led by the Greek Orthodox Patriarch, Bartholomew; and the Parliament of the World's Religions.

Film The forum was a principal adviser for the film *Renewal: Inspiring Stories from America's Religious Environmental Movement* (2007) and organized a conference at Yale when the film came out.

Multimedia project Tucker and Grim collaborated with evolutionary philosopher Brian Swimme on the Emmy Award-winning film *Journey of the Universe* (2011), which was broadcast on PBS and is available on Amazon. The *Journey of the Universe* project includes a book published by Yale University Press; a twenty-part Conversation series of interviews with scientists and environmentalists available in video and in podcasts; curricular materials for teaching; a newsletter, and a website (<http://www.journeyoftheuniverse.org>). In 2016 Tucker and Grim created another series of MOOCs (Massive Open Online Courses) for Yale/Coursera, titled *Journey of the Universe: A Story for Our Times*.

Yale Program on Climate Change Communication

The Yale Program on Climate Change Communication conducts scientific research on public climate change knowledge, attitudes, policy preferences, and behavior, and on the underlying psychological, cultural, and political factors that influence them. We also engage the public in climate change science and solutions, in partnership with governments, media organizations, companies, and civil society, and with a daily national radio program, Yale Climate Connections.

PARTNERSHIPS

The School of the Environment is a multidisciplinary learning center with tremendous resources, both within and outside the School. The School is engaged in partnerships that range from alliances with other Yale programs and schools to formal agreements with many external organizations and universities. These relationships enrich the School and add important dimensions to the YSE learning experience.

Within Yale

Students of the School of the Environment often take advantage of the faculty and resources of other schools and departments within the Yale system. YSE has several types of arrangements that enable students to fully benefit from the University.

The School has joint-degree agreements with the School of Architecture, Divinity School, School of Engineering & Applied Science, Law School, School of Management, School of Public Health, and Graduate School of Arts and Sciences. For further information on joint degrees, please refer to Joint Master's Degree Programs in the chapter Master's Degree Programs, and to Combined Doctoral Degree in the chapter Doctoral Degree Program.

The School has also cultivated relationships with key faculty members of other divisions of the University who have research and teaching interests that overlap with the School's foci. These faculty hail from the schools of Architecture, Engineering & Applied Science, Management, and Medicine, as well as the departments of Earth and Planetary Sciences, Ecology and Evolutionary Biology, Economics, and Anthropology, among others. For a full list of the faculty with joint appointments, see Secondary Appointments in the chapter Faculty and Administration.

YALE INSTITUTE FOR BIOSPHERIC STUDIES

Established in May 1990, the Yale Institute for Biospheric Studies (YIBS) serves as a key convener for Yale University's research and training efforts in the environmental sciences. YIBS is committed to the teaching of environmental studies to future generations and provides physical and intellectual centers and programs for research and education that address fundamental questions that will inform the ability to generate solutions to the biosphere's most critical environmental problems. There are currently three YIBS centers: the Center for Earth Observation, the Earth System Center for Stable Isotopic Studies, and the Center for Genetic Analysis of Biodiversity. YIBS also provides master's and doctoral student research support through various small-grant initiatives and a doctoral dissertation-enhancement grant program. For full information on YIBS and its associated programs and centers, see <http://yibs.yale.edu>.

YALE PEABODY MUSEUM OF NATURAL HISTORY

The Yale Peabody Museum of Natural History, founded in 1866, contains one of the great scientific collections in North America. Numbering more than thirteen million objects and specimens, the collections are used for exhibition and for research by scholars throughout the world. Each year, an increasing number of specimens from the collection are available online at <http://peabody.yale.edu>.

The mission of the Peabody Museum is to advance understanding of Earth's history through geological, biological, and anthropological research, and by communicating the results of this research to the widest possible audience through publication, exhibition, and educational programs.

Fundamental to this mission is stewardship of the museum's collections, which provide a remarkable record of the history of Earth, its life, and its cultures. Conservation, augmentation, and use of these collections become increasingly urgent as modern threats to the diversity of life and culture continue to intensify.

The museum's collections are a major component of the research and teaching activities of the Peabody and Yale. The curators and staff are engaged in contributing new knowledge based on the museum's research materials. All collections are used in undergraduate and graduate teaching and research, as well as in public programs and exhibitions. The Yale Peabody Museum fills many important roles on the Yale University campus, particularly as it has expanded its role in the community and the region, thereby offering a "front door" to the University for the general public.

In 1995 a formal collaboration was established among the Peabody Museum, the Yale Institute for Biospheric Studies, and the School of the Environment. This environmental partnership recognizes the Peabody Museum as a resource and catalyst for interdisciplinary research on Earth's history and environment, and seeks to strengthen the intellectual ties between the museum and other groups with a shared interest in environmental research at Yale. The School of the Environment maintains a close association with the Peabody.

The Peabody Museum Coastal Field Station on Long Island Sound in Guilford, Connecticut, is used collaboratively by YSE faculty, staff, and students for research on coastal and estuarine systems. The station is a thirteen-mile drive east of Yale and provides centrally located access to one of the country's most important estuaries. The station includes a boat ramp, deep-water moorings, and two boats. There is also simple laboratory space within the field station building, Beattie House. Nearby research lands available to YSE students include an island (Horse Island), coastal pond (Guilford Pond), and salt marsh complex (the Richards Property). The newly constructed Horse Island research station will be available to YSE faculty, staff, and students for research and teaching on the island beginning in fall 2021. To visit or utilize these properties and facilities, contact the Peabody Museum Office of Student Programs.

External Partnerships

The School of the Environment has partnership agreements with numerous local, national, and international organizations beyond the Yale campus. The following are a few examples of these arrangements.

NATIONAL UNIVERSITY OF SINGAPORE

The National University of Singapore is a top research university with a far-reaching faculty and a multinational student body. The university offers a Master of Science in Environmental Management that provides environmental management education for senior and mid-level managers in corporations, institutions, and government and nongovernmental organizations. This program is multidisciplinary, with the combined

resources of seven of the university's faculties, and also draws on the expertise of established environmental agencies and institutions both locally and globally.

In 2001 the Yale School of the Environment (YSE) entered into an official agreement with the National University of Singapore School of Design and Environment to share scientific, academic, and technical resources; exchange faculty and students; and cooperate in research, outreach, and conferences. We have had an active faculty exchange and a joint research program examining industrial ecology and urban metabolism in Singapore.

NEW YORK BOTANICAL GARDEN

YSE enjoys a reciprocal relationship with the Graduate Studies Program at the New York Botanical Garden. The Botanical Garden program, which began in 1896, currently enrolls about a dozen students who are carrying out studies in systematic and economic botany and applied plant ecology at field sites around the world. The program's expertise spans the spectrum of both systematic and economic botany. It is operated in conjunction with several other academic institutions, including YSE.

The resources of the New York Botanical Garden include one of the largest botanical libraries in the world, an herbarium and 10,000 species of living plants housed in several greenhouses, as well as an electron microscope, environmental chambers, and instrumentation for radiobiological, biochemical, anatomical, molecular, phytochemical, chemosystematic, numerical taxonomy, and vegetational studies. YSE offers a combined doctoral degree with the New York Botanical Garden, which is funded by the Lewis B. Cullman Fellowship. NYBG faculty teach courses at YSE in tropical plant taxonomy, applied plant ecology, and ethnobotany.

EXTERNAL JOINT-DEGREE PROGRAMS

YSE also has joint-degree agreements with the Pace University School of Law, the Vermont Law School, and Tsinghua University School of Environment. Further information on these programs is available through the Office of Admissions.

ADMISSIONS: MASTER'S DEGREE PROGRAMS

The Yale School of the Environment offers four two-year master's degrees: the professionally oriented Master of Environmental Management (M.E.M.) and Master of Forestry (M.F.), and the research-oriented Master of Environmental Science (M.E.Sc.) and Master of Forest Science (M.F.S.). The one-year midcareer Master of Environmental Management and Master of Forestry degree programs are designed for individuals with seven or more years of professional experience related to the environment or forestry. Students are currently enrolled in both programs; however, new student enrollment into the midcareer programs has been suspended until further notice.

LEARNING ABOUT YSE

The best way to learn about the School is to visit YSE virtually or in-person before submitting an application. The Office of Admissions offers both a virtual and formal campus visit program throughout the year, and we encourage prospective students to visit during one of these events for the most comprehensive view of YSE. Participants will meet students and staff to become familiar with the School's mission and goals, degree requirements and courses, opportunities for research and applied projects, career development, and life at Yale. Registration is required at <https://apply.environment.yale.edu/portal/main-event-page>. YSE faculty and staff also conduct outreach events online, around the United States and abroad, including at graduate school fairs, hosting virtual and off-campus information sessions, and visiting schools and universities. To learn if a representative will be coming to your area, please visit the admissions event schedule at <https://apply.environment.yale.edu/portal/main-event-page>.

Individual appointments are also available based on staff availability. Please note that for individual campus visits, it is best to visit Monday through Thursday, as few classes are held on Fridays, which are generally reserved for field trips and research. Weekend visits are not available. You can also connect with our admissions assistant directors online by scheduling a one-on-one meeting on the appointment page: https://apply.environment.yale.edu/portal/schedule_appointment. If you are interested in sitting in on a class, directly contact faculty members whose course is of interest to you; email is best. The class schedule for each term is posted at <http://environment.yale.edu/courses>. We do not conduct formal interviews as part of the admissions process. To schedule a visit, please contact us at admissions.yse@yale.edu.

The Admissions website, <http://environment.yale.edu/admissions>, has extensive information about the School. Should you have additional questions, we are pleased to correspond with you by email, or you may schedule a telephone conversation with our Admissions staff. The Admissions office can be reached at admissions.yse@yale.edu or by telephone at 800.825.0330.

APPLICATION PROCEDURES

The application form for admission to the YSE professional and research master's degrees (M.E.M., M.E.Sc., M.F., or M.F.S.) may be acquired online at <https://apply.environment.yale.edu/apply>. This form includes complete instructions for the application requirements.

Questions concerning admission or the application process should be directed to admissions.yse@yale.edu, or 800.825.0330. Admissions offers for YSE enable students to begin their study in the fall term only. The deadline for master's application consideration is December 15. Completed individual admissions files submitted by midnight EST on this date are guaranteed to receive a review by the Admissions Committee.

Previous applicants planning to reapply to YSE must submit a new application form, an updated résumé/curriculum vitae, and transcripts depicting all academic work not included in the previous application. We also recommend that applicants consider submitting updated research or personal statements. Admissions records including application forms and supplemental materials are held for two years by the Office of Admissions. Provided reapplication occurs within two admissions cycles, all required materials previously submitted to the Office of Admissions will be incorporated into the new application as requested. Documents submitted prior to the admissions cycle for a fall 2020 entry are no longer available.

PREPARATION FOR ADMISSION

In order to excel in their program of study at YSE as well as a career in environmental management, all M.E.M. students are expected to be conversant in four foundational knowledge areas. These areas are Physical Science, Social Science, Ecology, and Microeconomics.

Each fall term, four thoughtfully designed courses—tailored specifically for incoming M.E.M. students—are offered for students to learn, refresh, and deepen their understanding in each of these knowledge areas. In the process, students form a strong foundation to engage with the rigorous M.E.M. curriculum and approach complex problems through an interdisciplinary lens.

For incoming students with substantial academic or professional experience in any of the four areas, waiver exams will be made available each spring and summer preceding enrollment at YSE. Students may make two attempts to pass a waiver exam. Students who are able to demonstrate sufficient proficiency in a foundational knowledge area through passing an exam will receive a waiver.

Students who do not take or pass a waiver exam will be auto-enrolled by the registrar to complete the required foundational knowledge course(s). These courses must be completed during a student's first fall term:

ENV 511	Ecological Foundations for Environmental Managers
ENV 512	Microeconomic Foundations for Environmental Managers
ENV 521	Physical Science Foundations for Environmental Managers
ENV 522	Social Science Foundations for Environmental Managers

Foundational Knowledge Preparation

The following are some examples of recommended undergraduate courses that will help prepare incoming students for the MEM curriculum:

PHYSICAL SCIENCE

- Earth science course covering geosphere, atmosphere, and hydrosphere
- Hydrology
- Soil science
- Environmental chemistry
- Climate science

SOCIAL SCIENCE

- Environmental Governance
- Environmental Anthropology
- Environmental History
- Environmental Justice
- Environmental Sociology
- Human Geography
- Political Ecology
- Religion and Ecology

ECOLOGY

- General Ecology
- Biodiversity Science
- Population or Community Ecology
- Ecosystem Science or Ecosystems Ecology

MICROECONOMICS

- A course in Principles of Microeconomics

APPLICATION REQUIREMENTS

Candidates for admission must hold a four-year baccalaureate degree or an equivalent international degree, and are required to provide the following materials:

1. A completed online application form.
2. A résumé/curriculum vitae. Indicate full- or part-time for each job/internship/volunteer position.
3. A combination of short essays and longer statements that illustrate fit, skills, and overall experience.
4. One transcript or mark sheet from each college and/or university attended. Official transcripts are not required; however, all transcripts submitted must include the applicant's name and institution (not to be added by the applicant). Applicants who have completed a degree outside of the United States or Canada are strongly encouraged to submit a transcript evaluation.

If submitting a transcript evaluation, applicants should use EducationUSA advisers (<https://educationusa.state.gov/find-advising-center>), World Education Services

(www.wes.org), or Educational Credential Evaluators (<http://ece.org>) for course-by-course or ICAP evaluation of all transcripts (undergraduate and graduate). Those who secure WES or ECE evaluations should submit their official transcripts directly to WES or ECE, not the Office of Admissions. An additional copy of the transcript beyond the official evaluation is not required. Evaluations must be received in the Office of Admissions by the December 15 deadline for an application to be considered complete. The applicant is strongly encouraged to begin this process early, as evaluations can take more than a month to complete.

Admitted students submitting transcripts and degree certificates from Chinese universities must arrange for a verification report of their university transcript with the China Academic Degrees and Graduate Education Development Center (CDGDC; www.chinadegrees.cn/cn). Do not request your verification report from the CDGDC until your degree has been awarded. Verification reports should only be sent after accepting an offer of admission. The report must be mailed directly to the Office of Admissions by the CDGDC, rather than by the admitted student or any third party. Any transcript not mailed by the CDGDC will not be considered as a final official transcript.

5. Three letters of reference (academic and/or professional). Submission of the recommendation form and a one- to two-page letter is expected. Please note that we are unable to accept any additional recommendations beyond the required three. It is strongly recommended that the applicant submit at least one academic letter of reference.
6. Standardized test score reports:

The submission of GRE, GMAT, or LSAT scores is *optional* at this time.

An official TOEFL or IELTS score report if English is not a native or customary language of instruction (copies will not be accepted). Applicants must achieve at least a 100 on the iBT version of the TOEFL or a 7.0 on the IELTS examination (minimum of 6.5 in each section) to be given full consideration for admission. See additional information on requirements related to English as a second language below.

7. The \$80 application fee (a need-based fee waiver is available online).
8. If applying to the M.E.Sc. or M.F.S. program, please be sure to include a list of three potential advisers on the application form. Please also attach as an addendum to the personal statement a short paragraph for each of the listed advisers describing why you would like them to serve as your adviser on your intended research. Please be sure to link your research interests with theirs to help connect how they may be able to best advise you on your project.

Note: Additional documents beyond those listed above will not be reviewed and may be discarded at the end of the admissions cycle.

All application materials should be uploaded to the electronic application form. Materials cannot be returned, copied, or forwarded to third parties.

All applicants must hold a bachelor's-level degree and demonstrate satisfactory academic achievement, but there are no arbitrary standards or cutoffs for test scores or grade-point averages, with the exception of English language ability (TOEFL and IELTS). Letters of reference from individuals who can evaluate the applicant's

scholarship, professional activities, leadership skills, and career goals are especially valuable. Letters from undergraduate professors and/or professional supervisors are preferred. The School looks for students capable of making effective contributions to scientific knowledge or to professional service in addressing environmental problems. Special weight is given to relevant experiences obtained subsequent to graduation from college. Clarity regarding professional career goals is a critically important part of the applicant's personal statement. Faculty review teams read the applications submitted to the master's degree programs. Final admissions decisions rest on an integrated assessment of the components described above.

ENGLISH AS A SECOND LANGUAGE TRAINING REQUIREMENT

Applicants for whom English is not a native or customary language of university instruction must take the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS). We require a minimum TOEFL score of 100 on the Internet test. A minimum overall score of band 7.0 is required on the IELTS, with a minimum of 6.5 in each section. Please note that we will only accept the iBT version of the TOEFL examination. When taking either test, applicants should indicate the School's Institution Code Number 3996; no department code is necessary. Additional information about TOEFL can be found at www.ets.org/toefl. Information about IELTS can be found at www.ielts.org. Official test results will be sent directly to the School by the testing service and generally take two to three weeks to arrive.

Applicants who are required to submit the TOEFL or IELTS must also submit a supplemental essay (300 words maximum) detailing all educational, research, and/or work and internship experience related to the English language. The Admissions Committee may follow up with a phone interview to assist in determining English proficiency. As a condition of acceptance, it may be required that applicants for whom English is a second language, whose undergraduate degree work has not been conducted in English, or whose application suggests such a need, complete a six-week instructional program in written and spoken English conducted by Yale Summer Session. More information will be provided to those students who may qualify for this requirement.

ADMISSIONS: DOCTORAL DEGREE PROGRAM

The doctoral program is designed to develop the broad knowledge, analytical powers, technical skills, and creative thinking demanded of leaders in environmental and natural resources disciplines. Applicants should hold a bachelor's or master's degree in a field related to their intended program of study as expressed in the application.

APPLICATION PROCEDURES

The Doctor of Philosophy (Ph.D.) degree is administered jointly by the Yale School of the Environment and the Yale Graduate School of Arts and Sciences.

Applications for the Ph.D. program can be obtained from the website of the Yale Graduate School of Arts and Sciences at <https://gsas.yale.edu/admission>. The application deadline for the Ph.D. program is January 2, 2023. Doctoral education involves a close pairing between the student and a faculty adviser. Before applying to the doctoral program, applicants must identify and contact one or two faculty members who would serve as their major adviser if accepted to the program.

The Graduate Record Examination (GRE) General Test is optional. Applicants should ask their prospective advisers whether or not they wish to see the scores. For more information on the GRE, visit www.ets.org/gre. The Test of English as a Foreign Language (TOEFL) is required of all applicants whose native language is not English. This requirement is waived only for applicants who, prior to matriculation at Yale, will have received a baccalaureate degree or its international equivalent from a college or university where English is the primary language of instruction. The applicant must have studied in residence at the baccalaureate institution for at least three years to receive a waiver. If you do not qualify for a waiver but have taken the TOEFL within the past two years, you will need to have your TOEFL scores released to the Yale Graduate School of Arts and Sciences (code 3987). The International English Language Testing System (IELTS) may be substituted for the TOEFL. For more information and the latest updates on the TOEFL and IELTS, visit www.ets.org/toefl and www.ielts.org.

TUITION, FEES, AND OTHER EXPENSES

Master's Program Tuition and Fees

The 2022–2023 tuition for master's degrees (M.E.M., M.F.S., M.E.Sc., and M.F.) is \$47,600. Tuition for special students is based on the number of courses taken. The School reserves the right to revise tuition as it deems appropriate. Tuition does not include hospitalization/specialty insurance as required by the University, or materials fees charged by other schools and departments in the University.

Two-year master's students must pay full tuition for two years, regardless of the number of courses taken.

For 2022–2023, a single student should also anticipate estimated expenses of \$500 for books and supplies; \$1,500 for transportation, \$2,756 for medical insurance; living expenses of \$18,070 for room, board, and personal expenses for the nine-month academic year; \$375 for the mandatory Student Activity Fee; and \$135 for the mandatory Student IT Fee.

Ph.D. Program Tuition and Fees

The 2022–2023 tuition for the Ph.D. program is \$46,900. Most doctoral students receive a School fellowship that covers the cost of their tuition and provides a 12-month stipend for the first five years of their program. For 2022–2023, the stipend is \$36,300. Doctoral students must pay a nominal continuous registration fee (CRF) for no more than three years thereafter. The continuous registration fee is \$765 per term.

Registration

All students in the master's programs must register for courses using the online registration system (available at www.yale.edu/sis) within the registration period for the fall and spring terms. A penalty of \$35 will be charged for any changes made to a student's course registration after the Add/Drop period. No changes are allowed after the midterm point in each term. See the academic calendar for specific dates.

International students are required to complete a nonacademic registration at the Office of International Students and Scholars prior to their regular academic registration.

Tuition Fees for Special Students

The tuition charge for special students is 25 percent of tuition for one course, 50 percent for two courses, 75 percent for three courses, and full tuition for four or more courses for each term of attendance.

Continuous Registration

Master's degree students who wish to pursue their research through a six-month or one-year internship are permitted to do so and are considered enrolled on a full-time

basis (student is entitled to continue membership in Yale Health and defer student loans). Upon return, the student will register as a full-time student and pay tuition for the period needed to complete the degree requirements. Students may not register for regular course work, or work as a teaching assistant, while on continuous registration status. The fee for continuous registration is \$3,250 per term. Students are permitted to be on continuous registration for a maximum of two terms.

Tuition Deposit

Upon acceptance of admission, a deposit of \$500 payable directly to the Yale School of the Environment is required to hold a place in the entering class. If a decision is made not to matriculate, the deposit will not be refunded.

Tuition Rebate and Financial Aid Refund Policy

On the basis of the federal regulations governing the return of federal student aid (Title IV) funds for withdrawn students, the rebate and refund of tuition are subject to the following policy.

1. For purposes of determining the refund of Title IV funds, any student who withdraws from the School of the Environment for any reason during the first 60 percent of the term will be subject to a pro rata schedule that will be used to determine the amount of Title IV funds a student has earned at the time of withdrawal. A student who withdraws after the 60 percent point has earned 100 percent of the Title IV funds. In 2022–2023, the last days for refunding Title IV funds will be November 2, 2022, in the fall term and March 31, 2023, in the spring term.
2. For purposes of determining the refund of institutional aid funds and for students who have not received financial aid:
 - a. 100 percent of tuition will be rebated for withdrawals that occur on or before the end of the first 10 percent of the term: September 9, 2022, in the fall term and January 26, 2023, in the spring term.
 - b. A rebate of one-half (50 percent) of tuition will be granted for withdrawals that occur after the first 10 percent but on or before the last day of the first quarter of the term: September 24, 2022, in the fall term and February 10, 2023, in the spring term.
 - c. A rebate of one-quarter (25 percent) of tuition will be granted for withdrawals that occur after the first quarter of a term but on or before the day of midterm: October 24, 2022, in the fall term and March 6, 2023, in the spring term.
 - d. Students who withdraw for any reason after midterm will not receive a rebate of any portion of tuition.
3. The death of a student shall cancel charges for tuition as of the date of death, and the bursar will adjust the tuition on a pro rata basis.
4. If the student has received student loans or other forms of financial aid, funds will be returned in the order prescribed by federal regulations; namely, first to Federal Direct Unsubsidized Loans, if any; then to Federal Direct Graduate PLUS Loans; next to any other federal, state, private, or institutional scholarships and loans; and, finally, any remaining balance to the student.

5. Recipients of federal and/or institutional loans who withdraw are required to have an exit interview before leaving Yale. Students leaving Yale receive instructions on completing this process from Yale Student Financial Services.

Student Accounts and Billing

Student accounts, billing, and related services are administered through the Office of Student Accounts, which is located at 246 Church Street. The office's website is <http://student-accounts.yale.edu>.

The Student Account is a record of all the direct charges for a student's Yale education such as tuition, room, board, fees, and other academically related items assessed by offices throughout the University. It is also a record of all payments, financial aid, and other credits applied toward these charges.

Students and student-designated proxies can view all activity posted to their Student Account in real time through the University's online billing and payment system, YalePay (<https://student-accounts.yale.edu/yalepay>). At the beginning of each month, email reminders to log in to YalePay to review the Student Account activity are sent to all students at their official Yale email address and to all student-designated YalePay proxies. Payment is due by 4 p.m. Eastern Time on the last day of the month.

Yale does not mail paper bills or generate monthly statements. Students and their authorized proxies can generate their own account statements in YalePay in pdf form to print or save. The statements can be generated by term or for a date range and can be submitted to employers, 401K plans, 529/College Savings Plans, scholarship agencies, or other organizations for documentation of the charges.

Students can grant others proxy access to YalePay to view student account activity, set up payment plans, and make online payments. For more information, see [Proxy Access and Authorization \(https://student-accounts.yale.edu/understanding-your-bill/your-student-account\)](https://student-accounts.yale.edu/understanding-your-bill/your-student-account).

The Office of Student Accounts will impose late fees of \$125 per month (up to a total of \$375 per term) if any part of the term bill, less Yale-administered loans and scholarships that have been applied for on a timely basis, is not paid when due. Students who have not paid their student account term charges by the due date will also be placed on Financial Hold. The hold will remain until the term charges have been paid in full. While on Financial Hold, the University will not fulfill requests for transcripts or provide diplomas and reserves the right to withhold registration or withdraw the student for financial reasons.

PAYMENT OPTIONS

There are a variety of options offered for making payments toward a student's Student Account. Please note:

- All bills must be paid in U.S. currency.
- Yale does *not* accept credit or debit cards for Student Account payments.
- Payments made to a Student Account in excess of the balance due (net of pending financial aid credits) are not allowed on the Student Account. Yale reserves the right to return any overpayments.

Online Payments through YalePay

Yale’s recommended method of payment is online through YalePay (<https://student-accounts.yale.edu/yalepay>). Online payments are easy and convenient and can be made by anyone with a U.S. checking or savings account. There is no charge to use this service. Bank information is password-protected and secure, and there is a printable confirmation receipt. Payments are immediately posted to the Student Account, which allows students to make payments 365/24/7 up to 4 p.m. Eastern Time on the due date of the bill, from any location, and avoid late fees.

For those who choose to pay by check, a remittance advice and mailing instructions are available on YalePay. Checks should be made payable to Yale University, in U.S. dollars, and drawn on a U.S. bank. To avoid late fees, please allow for adequate mailing time to ensure that payment is received by 4 p.m. Eastern Time on the due date.

Cash and check payments are also accepted at the Office of Student Accounts, located at 246 Church Street. The Cashier’s Office is open Monday through Friday from 8:30 a.m. to 4:30 p.m.

Yale University partners with Flywire, a leading provider of international payment solutions, to provide a fast and secure way to make international payments to a Student Account within YalePay. Students and authorized proxies can initiate international payments from the Make Payment tab in YalePay by selecting “International Payment via Flywire” as the payment method, and then selecting the country from which payment will be made to see available payment methods. International payment via Flywire allows students and authorized proxies to save on bank fees and exchange rates, track the payment online from start to finish, and have access to 24/7 multilingual customer support. For more information on making international payments via Flywire, see International Payments Made Easy at <https://student-accounts.yale.edu/yalepay>.

A processing charge of \$25 will be assessed for payments rejected for any reason by the bank on which they were drawn. In addition, the following penalties may apply if a payment is rejected:

1. If the payment was for a term bill, late fees of \$125 per month will be charged for the period the bill was unpaid, as noted above.
2. If the payment was for a term bill to permit registration, the student’s registration may be revoked.
3. If the payment was given to settle an unpaid balance in order to receive a diploma, the University may refer the account to an attorney for collection.

YALE PAYMENT PLAN

A Yale Payment Plan provides parents and students with the option to pay education expenses monthly. It is designed to relieve the pressure of lump-sum payments by allowing families to spread payments over a period of months without incurring any interest charges. Participation is optional and elected on a term basis. The cost to sign up is \$50 per term.

Depending on the date of enrollment, students may be eligible for up to five installments for the fall and spring terms. Payment Plan installments will be

automatically deducted on the 5th of each month from the bank account specified when enrolling in the plan. For enrollment deadlines and additional details concerning the Yale Payment Plan, see <https://student-accounts.yale.edu/ypp>.

BILL PAYMENT AND PENDING MILITARY BENEFITS

Yale will not impose any penalty, including the assessment of late fees, the denial of access to classes, libraries, or other facilities, or the requirement that a student borrow additional funds, on any student because of the student's inability to meet their financial obligations to the institution, when the delay is due to the delayed disbursement of funding from VA under chapter 31 or 33.

Yale will permit a student to attend or participate in their course of education during the period beginning on the date on which the student provides to Yale a certificate of eligibility for entitlement to educational assistance under chapter 31 or 33 and ending on the earlier of the following dates: (1) the date on which payment from VA is made to Yale; (2) ninety days after the date Yale certifies tuition and fees following the receipt of the certificate of eligibility.

Interruption or Temporary Suspension of University Services or Programs

Certain events that are beyond the University's control may cause or require the interruption or temporary suspension of some or all services and programs customarily furnished by the University. These events include, but are not limited to, epidemics or other public health emergencies; storms, floods, earthquakes, or other natural disasters; war, terrorism, rioting, or other acts of violence; loss of power, water, or other utility services; and strikes, work stoppages, or job actions. In the face of such events, the University may, at its sole discretion, provide substitute services and programs, suspend services and programs, or issue appropriate refunds. Such decisions shall be made at the sole discretion of the University.

Master's Financial Aid

POLICIES AND PROCEDURES

In general, students must apply for financial aid in order to be considered for a YSE scholarship. Since financial aid awards are based primarily on financial need, information about student finances that is not available in the application for admission is required. YSE is need-blind. Therefore, applying for financial aid and having financial need in no way affect the decision to offer admission.

The deadline for prospective students to apply for need-based financial aid is February 15. If that deadline is missed, the student will not be considered for need-based financial aid. This can be a costly oversight, as what is received in the second year is generally the same as what is received in the first year. The deadline for current students to apply for financial aid is April 15.

If a student is a U.S. citizen or permanent resident, two forms must be submitted, the YSE Financial Aid Application and the Free Application for Federal Student Aid (FAFSA). If a student is an international student, only one form must be submitted, the

YSE Financial Aid Application. Students must reapply for financial aid for the second year, although the amount of YSE scholarship will most likely remain the same as in the first year.

A limited number of merit-based scholarships are available, for which no separate financial aid application is required. Examples include merit awards to the top applicants to the Master of Environmental Science and Master of Forest Science programs and the Paul D. Coverdell Fellowships for qualifying Returned Peace Corps Volunteers.

YSE scholarships, work study, and federal loans (Direct Stafford and Grad PLUS) are available to U.S. citizens and permanent residents. YSE scholarships, work study, and Yale International Loans are available to international students.

The primary factor in determining the amount of a need-based YSE scholarship is financial need as determined by the review of the student's (and spouse's, if applicable) income and assets and any third-party funding that the student expects to receive. Merit is a secondary factor.

Students are considered to be financially independent of their parents. Therefore, information about parent income and assets is not required. Students have the option of providing that information, however, which may yield a higher need-based scholarship award. Under no circumstances will it yield a lower scholarship award. On the other hand, students must report any direct financial support that they expect to receive from their parents, such as money for tuition or rent.

Approximately three-quarters of YSE students receive scholarships in any given year from an annual scholarship budget in excess of \$5 million.

Satisfactory Academic Progress

To be eligible for financial aid, a student must be making Satisfactory Academic Progress (SAP) in the degree program. Financial aid includes all federal student aid funds (Federal Direct Stafford Loan, Federal Direct Grad PLUS Loan, and/or Federal Work Study) as well as institutional funds. For a complete explanation of the YSE SAP policy, please see the YSE Student Handbook, chapter Rules & Regulations, section Academic Regulations and Policies.

Less Than Half-Time Enrollment, Including Continuous Registration

Students enrolled less than half-time (i.e., for less than 6 credits in a term) and students who are not actively working toward a degree, such as those in continuous registration status, are not eligible for federal or institutional financial aid. Furthermore, financial aid awards are based on an assumption of full-time enrollment and will be revised proportionately should a student choose to enroll less than full-time. Students considering enrolling less than full-time should first consult with the assistant dean of student services and director of financial aid to understand the academic and financial consequences, respectively, of that decision.

Joint-Degree Students

In most joint-degree programs, students split their time between the two joint schools, spending one and one-half years at each school for a total program length of three years.

Each school at Yale is financially independent, which means that the financial aid award a student receives at one school is not transferable to the joint school. The joint-degree student should follow the financial aid application procedures of the school to which the student will be paying tuition. If the student is paying tuition at YSE, the student should apply for financial aid through YSE. If the student is paying tuition at the joint school, the student should apply for financial aid through that school.

If the joint-degree student is applying for admission to two schools simultaneously, the student should apply for financial aid at both schools, also simultaneously.

Fifth-Year Students

During their senior year at Yale College, students may apply for admission to the YSE Five-Year Program. These students sometimes defer their enrollment in the YSE master's program for a year of outside volunteer work or employment. To be considered for financial aid for their enrollment at YSE, these students must submit their financial aid application materials by the February 15 deadline prior to their matriculation into the program. This could mean that the student submits the financial aid application materials during the student's deferral or "gap" year. It is the student's responsibility to submit all documents by the February 15 deadline.

Scholarships

Most of the School's scholarship budget is funded by private donors. Scholarship recipients are automatically considered for all named scholarships. The named scholarships listed below are *not* in addition to any generic scholarship a student receives in the financial aid award notification but may be matched to a scholarship recipient once the student matriculates.

The School is delighted to recognize the generosity of the donors who have helped make the following scholarships possible:

Jonah Meadows Adels Memorial Scholarship
 Anne Armstrong-Colaccino Scholarship
 Bataua Scholarship
 Beinecke/YSE Scholarship
 Flora and John Berbee Scholarship Fund
 Berkley Scholarship
 Jabe Blumenthal Scholarship
 George Brett Memorial Fund
 Broad Arrow Scholarship
 Nelson C. Brown (B.A. 1906, M.F. 1908) Scholarship
 Sara Shallenberger Brown Scholarship
 Coleman P. Burke Scholarship
 Leland H. Burt ('30 B.S.) Endowed Scholarship
 Burt-Pfeiffer Fund

Philip Laurance Buttrick (M.F. 1911) Scholarship
Paul Douglas Camp Memorial Scholarship
Leonard G. Carpenter (B.A. 1924) Scholarship
Class of 1980 Scholarship
Class of 2017 Scholarship
Crane Family Scholarship
Trammell S. Crow (1974) Scholarship
Crown Zellerbach Foundation Fund
Strachan and Vivian Donnelley Scholarship
Michael P. Dowling Scholarship
Enid Storm Dwyer Scholarship
Environmental Scholars Fund
Frederick V. Ernst (1960) Gift Fund
Boyd Evison Scholarship Fund
Forestry YAF Scholarship Fund
Edith and Johannes Frondt Scholarship
Gonzalez Family Scholarship
James Lippincott Goodwin (B.A. 1905, M.F. 1910)
Charles W. Goodyear Memorial Fund
John S. Griswold (B.A. 1937) Scholarship
Leah Hair Scholarship
H. Stuart Harrison (B.A. 1932) Fellowship
Vira I. Heinz Endowment Scholarship
John and Catha Hesse Fund
Adelaide Hixon Scholarship
Joseph Hixon YSE Scholarship
Jacqueline C. and John P. Hullar Scholarship
Jesse D. Johnson Scholarship
Stephen and Betty Kahn Scholarship
Peggy King Memorial Scholarship
Marvin Klemme (M.F. 1935) Fellowship
Carl W. Knobloch, Jr. Fellowship
Kroon Environmental Studies Scholarship
Fred Krupp Scholarship in Environmental Studies
Charles Chacey Kuehn (M.F. 1934) Fund
Robert H. Kuehn, Jr. '64 B.A., '68 M.U.S., '68 M.Arch. Scholarship
Leadership Scholars Fund
Urey Lisiansky Scholarship Fund
John A. MacLean '27S Scholarship
Alan N. Mann (1908) Memorial Fellowship
Margaret K. McCarthy and Robert Worth Scholarship
Dorothy S. McCluskey Scholarship
Thomas McHenry Scholarship
Preston R. Miller, Jr. '71 YSE Scholarship
Arthur N. Milliken Scholarship
Mary P. Moran Scholarship
John M. Musser Fellowship
Carl F. Norden Family Scholarship

Obernauer Family Scholarship
 Gilman Ordway (B.A. 1947) Family Scholarship
 Parklands Scholarship
 PETAL Foundation Scholarship
 Joanne Polayes Scholarship
 Kushok Bakula Rimpoche Scholarship
 Rockefeller-Underhill Scholarship for Tropical Conservation
 Heather L. Ross and Edward L. Strohbahn, Jr. Scholarship
 Andrew Sabin International Environmental Fellowship
 William Henry Sage Memorial Fund
 Ralph C. Schmidt and Susan M. Babcock Scholarship
 Drs. Poh Shien and Judy Young International Scholarship
 Simeone Entomology Scholarship
 David M. Smith, Morris K. Jesup Professor of Silviculture Scholarship
 David and Karen Sobotka Scholarship
 Sobotka Joint YSE-Jackson Institute Fellowship
 Cameron and Gus Speth Scholarship
 Gillian and Stuart W. Staley '95 M.P.P.M., '95 M.E.S. Scholarship
 Stapleton Scholarship
 Student Conservation Association Fellowship in honor of John R. Twiss '60
 VIEW Scholarship
 Rodney B. Wagner Class of 1954 International Scholarship
 William D. Waxter III Fellowship
 Marianne Welch Scholarship
 William Egbert Wheeler Fund
 Mr. and Mrs. James Wiley Endowed Scholarship for Conservation Biology
 Hubert Coffing Williams (Ph.D. 1906, M.F. 1908)
 Joseph H. Williams Scholarship
 Charles F. Wilson (B.A. 1939) Memorial Fund
 Ray L. Wilson Scholarship
 Frank & Lynne Wisneski YSE Scholarship
 Charles Boughton Wood Fund
 Wyss Foundation Scholarship for Conservation of the American West
 Yale Club of New Haven
 YSE Alumni Association Board Scholarship

Employment Opportunities

YSE work study These positions vary from clerical to research to editorial work. Eligible students must have financial need, as confirmed by the YSE Office of Admissions and Financial Aid. Applications are available on the Yale Student Employment Office website (www.yalestudentjobs.org) beginning in August. The pay rate is fixed at \$14.75 per hour. At least eighty positions are available annually and only to students with a YSE affiliation.

Regular student jobs and teaching fellowships Financial need is not required. Interested students should contact centers, departments, professors, and programs directly beginning in late spring or summer. Pay rates begin at \$12.50 per hour for

regular student jobs. Pay rates for teaching fellowships are either \$4,000 or \$8,000 per term depending on the effort level. At least seventy positions are available annually.

Community service jobs Eligible students must be U.S. citizens or permanent residents and have financial need, as confirmed by the YSE Office of Admissions and Financial Aid. Applications are available on the Yale Student Employment Office website beginning in August. Pay rates begin at \$12.50 per hour. At least one hundred positions are available annually to students across the University.

Other on-campus jobs Financial need is not required. Applications are available on the Yale Student Employment Office website beginning in August. Pay rates begin at \$12.50 per hour. At least four hundred positions are available annually to students across the University.

Loans

Federal Direct Stafford Loan (U.S. citizens and permanent residents only) In general, the maximum annual loan amount is \$20,500. The interest rate is fixed at 5.28% with an origination fee of 1.057%. There is no credit check required. The standard repayment term is ten years. A six-month grace period immediately follows separation from school or otherwise dropping below half-time enrollment status, at which time repayment is required. The loan is requested by completing and returning a loan request form available on the School's financial aid forms webpage: <https://environment.yale.edu/aid/forms>. After initial processing, the loan will be assigned to a servicer contracted with the U.S. Department of Education, such as FedLoan, Great Lakes, Navient, or Nelnet.

Federal Direct Grad PLUS Loan (U.S. citizens and permanent residents only) In general, the maximum annual loan amount is the cost of attendance less all other resources. The interest rate is fixed at 6.28% with an origination fee of 4.228%. A credit check is required. Repayment terms are similar to Federal Direct Stafford Loans. The loan is requested by completing and returning a loan request form available on the School's financial aid forms webpage. After initial processing, the loan will be assigned to a servicer contracted with the U.S. Department of Education, such as FedLoan, Great Lakes, Navient, or Nelnet.

Yale International Loan (international students only) In general, the maximum annual loan amount is \$30,000 or the cost of attendance less all other resources, whichever is less. The interest rate is fixed at 7.75% with an origination fee of 5%. There is no credit check required. Repayment terms are similar to Federal Direct Stafford Loans. The loan is requested by completing and returning loan request and self-certification forms available on the School's financial aid forms webpage. The Yale Student Loan Billing and Payment Office is responsible for the management and collection of the loan.

Private education loan (U.S. citizens and permanent residents as primary borrowers or co-borrowers only) In general, the maximum annual loan amount is the cost of attendance less all other resources. The interest rate is fixed or variable and dependent on the credit rating of the primary borrower and co-borrower, if applicable. Origination fees from zero to 3%, repayment terms, and servicing are dependent on the lender. A credit check is required. The loan is requested by applying directly to a

lender. A list of lenders from whom students have borrowed recently is available at www.elmselect.com/?schoolid=156#/results.

International Students – Certification of Finances for Visa

International students must certify full funding for their entire two-year course of study before visa documents can be issued. Instructions and forms are mailed after an admitted student accepts the offer of admission (deadline April 15). More information is available from Yale's Office of International Students and Scholars: <https://oiss.yale.edu>.

Veterans

Eligible students are strongly encouraged to seek specific information about Veterans Administration (VA) benefits from their local Veterans Administration office by calling 800.827.1000 or visiting <https://benefits.va.gov/gibill>. The School also participates in the Yellow Ribbon Program, which covers remaining tuition that the Post-9/11 GI Bill does not cover. The associate director of academic affairs, in partnership with the associate dean of academic affairs and the associate director of financial aid, coordinates the administration of Veterans Administration benefits at YSE.

Institutional policy confirming compliance with 38 USC 3679

The Yale School of the Environment (YSE) permits any *covered* individual to attend or participate in the course of education during the period beginning on the date on which the individual provides to YSE a certificate of eligibility for entitlement to educational assistance under chapter 31 or 33 (a "certificate of eligibility" can also include a "Statement of Benefits" obtained from the Department of Veterans Affairs' website or a VAF 28-1905 form for chapter 31 authorization purposes) and ending on the earlier of the following dates:

1. The date on which payment from VA is made to YSE.
2. Ninety days after the date that YSE certified tuition and fees following the receipt of the certificate of eligibility.

YSE will not impose any penalty, including the assessment of late fees, the denial of access to classes, libraries, or other institutional facilities, or the requirement that a *covered* individual borrow additional funds, on any *covered* individual because of the individual's inability to meet his or her financial obligations to YSE due to the delayed disbursement funding from VA under chapter 31 or 33. NOTE: A *covered* individual is any individual who is entitled to educational assistance under chapter 31, Vocational Rehabilitation and Employment, or chapter 33, Post-9/11 GI Bill benefits.

LIFE AT THE SCHOOL OF THE ENVIRONMENT

Educational Facilities

Kroon Hall, the ultra-green home of the Yale School of the Environment, expresses in physical form the School's best traditions, values, and aspirations. The building, which opened in January 2009, achieves its remarkable energy savings from a host of design elements and technical strategies molded to fit the weather and climate of its New England location. Situated in the area of the University known as Science Hill, Kroon Hall is named for the family of benefactor and Yale College alumnus Richard Kroon, B.A. 1964. With its high barrel-vaulted gable ends, simple lines, and curved rooftop, Kroon Hall is a modernist blend of cathedral nave and Connecticut barn.

Kroon Hall provides office space for fifty faculty and staff members and has three classrooms. The 175-seat Burke Auditorium is used for lectures and classes, and commands beautiful views of West Rock and the David S. Ingalls Rink across the street. The Knobloch Environment Center is meant for socializing, but students have also embraced it as a study space. The Ordway Learning Center on the ground floor also has ample space for quiet study. The \$43.5-million building was designed by Hopkins Architects of Great Britain in partnership with Connecticut-based Centerbrook Architects and Planners and holds the highest rating – platinum – in the green-building certification program, Leadership in Energy and Environmental Design (LEED). Kroon Hall provides 56,467 square feet and is designed to use 67 percent less energy than a typical building of its size. Its tall, thin shape and east-west orientation play a big role in heating and cooling. The lowest floor is set into a hillside, with only its south side exposed, providing thermal insulation, minimizing northern exposure, and increasing the amount of natural light that enters the building from adjacent courtyards. The south facade maximizes solar gain during the winter, and Douglas fir louvers covering glass facades on the east and west ends keep out unwanted heat and glare. The building's shape, combined with the glass facades, enables daylight to provide much of the interior's illumination. Light and occupancy sensors dim artificial lighting when it is not needed.

A 100-kilowatt rooftop array of photovoltaic panels is designed to provide 25 percent of the building's electricity. Four 1,500-foot-deep wells are designed to use the relatively constant 55° (F) temperature of underground water for heating and cooling, replacing the need for conventional boilers and air conditioning. Four solar panels embedded in the southern facade are designed to provide hot water. Exposed concrete walls and ceilings provide thermal stability by retaining heat in winter and cold in summer. Instead of air being forced through overhead ducts, an energy-saving displacement ventilation system moves warm and cool air through an air plenum and multiple diffusers in elevated floors. Low-velocity fans in the basement keep the air circulating throughout the building. In winter, the ventilation system also transfers the heat from exhaust to incoming fresh air; in summer, air handling units spray water on incoming fresh air, reducing its temperature by up to 18° through evaporation.

In mild weather, Kroon's occupants assist in the energy savings by opening windows in response to an electronic, color-coded prompt system. A pair of green and amber lights in each hallway indicate whether it's a "Green Day": i.e., when the green indicator light is on, the ventilation and cooling/heating systems shut down, and the windows should be opened for natural ventilation.

A rainwater-harvesting system channels water from the roof and grounds to a garden in the south courtyard, where aquatic plants filter out sediment and contaminants. The gray water, held in underground storage tanks, is used for irrigation and pumped back into Kroon for flushing toilets. The system is designed to save 300,000 gallons of potable city water annually and to reduce the burden on city sewers by lessening the amount of storm runoff. Half of Kroon Hall's red oak paneling—15,000 board feet—came from the 7,840-acre Yale-Myers Forest in northern Connecticut, which is managed by the School. The building's pale yellow exterior, composed of sandstone from Ohio, echoes other Yale buildings. The north and south courtyards were constructed to create a community among disparate buildings on Science Hill. The south courtyard, landscaped by Olin Studio of Philadelphia, is a raised platform, with a green roof of soil one-foot deep and surrounded by twenty-five varieties of native plantings. Underneath the courtyard is a service node, centralizing all trash and recycling pickups as well as deliveries for the southwest corner of Science Hill and accessible by a single driveway off Sachus Street.

Sage Hall, a four-story building located at 205 Prospect Street and a gift of William H. Sage, B.A. 1865, in memory of his son, DeWitt Linn Sage, B.A. 1897, was completed in 1923. Administrative, development, alumni, and program offices of the School are housed in Sage Hall, along with four classrooms. Sage Hall is home to a computer cluster with twenty-four computers for student use. Sage also houses a 490-square-foot student lounge, appointed with a large table and comfortable couches, which students use for studying, special events, and weekly social events. Bowers Auditorium is designed to handle large lectures and seminars as well as small group projects. Bowers, which has a seating capacity of one hundred with tables and chairs, was built onto Sage Hall in 1931 with funds provided by the bequest of Edward A. Bowers, B.A. 1879. In 2011 the original Bowers floor was replaced using beautiful red oak flooring harvested from Yale-Myers Forest, and in 2016 energy-efficient LED lights were installed.

Facilities for research and instruction in silviculture, natural resource and forest economics, forest policy, and biometry are in Marsh Hall at 360 Prospect Street in the Marsh Botanical Garden. A classroom, meeting space, kitchen, and accessible bathroom are available on the first floor. This large, four-story mansion was originally the residence of Professor Othniel C. Marsh, B.A. 1860, a distinguished paleontologist and Western explorer of the nineteenth century. He bequeathed the building to the University in 1899, and for twenty-five years it housed the entire Forest School. Marsh Hall was designated a National Historic Landmark by the United States Department of the Interior in 1965.

The William B. Greeley Memorial Laboratory at 370 Prospect Street, named in honor of William Buckhout Greeley, M.F. 1904, houses a recently renovated social space in the main lobby; laboratories for research into the ecology and management of landscapes and ecosystems, urban sustainability, the biology of trees, and environmental chemistry; and doctoral program spaces. The building was designed by renowned

architect Paul Rudolph and is a classic example of “Brutalist” architecture. Adjacent to the Greeley lab is a 3,800-square-foot greenhouse, which is used for hands-on learning and research. Greeley Laboratory and its greenhouse were built in 1959 with funds from the forest industries, the John A. Hartford Foundation, and other benefactors.

The Class of 1954 Environmental Science Center at 21 Sachem Street is dedicated to the Class of 1954 in honor of the \$70 million the class donated in 2000 to support new science buildings and other major University priorities. It is an interdisciplinary facility built by the University with the aim of further fostering leadership in teaching of and research in science and engineering. The building was designed to encourage collaboration among faculty and students pursuing environmental studies. Four natural science faculty members from YSE have their laboratories in the Environmental Science Center, which also houses research laboratories for the Yale Science Departments of Ecology and Evolutionary Biology, Earth and Planetary Sciences, and Anthropology as well as the Yale Institute for Biospheric Studies.

The restored former residences at 301 Prospect Street and 380 Edwards Street house the offices of many of the School’s programs, as well as doctoral student offices; each building has a classroom.

The mansion at 300 Prospect Street houses the School’s Admissions, Financial Aid, Communications, and Research offices.

Osborn Memorial Laboratories at the corner of Prospect Street and Sachem Street houses one YSE faculty member’s lab and office in addition to many other Yale laboratories.

YALE FORESTS AND THE QUIET CORNER INITIATIVE

North of New Haven, the Yale Forests Program manages 10,852 acres of forestland in Connecticut, New Hampshire, and Vermont that are part of the Forest School at the Yale School of the Environment. The seven discrete forests, donated to the School between 1913 and 1986, range in size from the seventy-five-acre Crowell Ravine in Vermont to the 7,840-acre Yale-Myers Forest in northeast Connecticut. The composition of the Yale Forests reflects a latitudinal gradient ranging from a central hardwood cover type in Connecticut to a northern hardwood cover type in New Hampshire and Vermont, with extensive mixed-wood stands of pine and hemlock in both regions. The area encompassed by the forests includes almost all of the topographical and soil conditions, site classifications, and cover types found in New England.

The Yale Forests Program provides educational, research, and professional opportunities to the Yale community and beyond through a sustainably managed and ecologically sound working forest. Faculty and students use the Yale Forests as a laboratory for teaching, management, demonstration, and research. Students working at the Yale Forests receive training that covers aspects of hydrology and soils, taxonomy, forest and community ecology, silviculture, forest operations, forest finance and policy, and sociology in order to prepare them for careers as foresters and natural resource managers. Every summer ten to twelve students are chosen for the apprentice forester program at the Yale Forests, which includes hands-on training in maintenance of infrastructure, property boundary research and delineation, geographic information systems (GIS), mapping and classification, sampling and inventory, managing forest

operations, and the design and implementation of silvicultural prescriptions. Several students from the apprentice program are selected to work for the Yale Forests Program the following academic year as assistant forest managers, where they receive additional training in forest administration and management.

Research performed at the Yale Forests is conducted under the supervision of faculty members of the School and by academic institutions across the region and encompasses a broad range of topics that include forest ecology, silviculture, aquatic and wildlife community ecology, hydrology, and economic, legal, and social studies. The forest is used for both doctoral and master's student research, the latter performed either as an independent project or in conjunction with student involvement with existing forest management. The forests also serve as a platform for collaborative research with other universities. Many breakthroughs in human understanding of ecological function began with research conducted at the Yale Forests.

The Yale Forests are used for both academic field trips and workshops held for professional or community organizations. Field trip and workshop topics are wide-ranging and include silviculture and forest dynamics, hydrology, wildlife habitat, carbon dynamics, and forest management.

Faculty and staff oversee management of the forests in partnership with three postgraduate fellows. Graduate professional students working as management fellows or coordinators carry out the bulk of the on-the-ground management. The forests are maintained as working forests, and outputs of management include commercial timber and non-timber forest products. The Yale-Myers Forest is the largest and most actively utilized parcel managed by the Yale Forests Program and is certified by the Forest Stewardship Council. Facilities at Yale-Myers Forest include 8,000 total square feet of living space within five buildings, including rustic bunkhouses that accommodate forty-eight, a classroom and library, kitchen and dining hall, communal living space, a research lab, and an open-air pavilion.

The Quiet Corner Initiative (QCI) engages with the communities and working landscape that surround Yale-Myers Forest. QCI works by developing programs that connect master's-level courses and University research to real environmental assessment and management challenges on private lands surrounding the forest. Current programs focus on forest and open space conservation and management; watersheds and rivers; renewable energy; and sustainable agriculture. The initiative seeks to advance three separate but related sets of goals: (1) to enrich the applied curriculum for professional students at the School of the Environment, providing reliable and consistent opportunities to bring learned skills to tangible problems that are in easy reach of the classroom and that contribute to a vibrant rural economy based on sustainable natural resource management; (2) to provide and cultivate a high-quality natural and social science research environment for students and faculty to investigate and analyze the drivers of environmental change and adaptive management at a landscape scale; and (3) to leverage the traditional strengths of Yale University in research, education, and leadership in working toward landscape-scale sustainability goals in our own backyard.

In addition to the forestland managed by the Yale Forests Program, close working relationships exist with non-Yale forests that faculty and students use for education and research. Yale has a long history of collaboration with the 6,800-acre Great Mountain

Forest in northwestern Connecticut. The program manages the Yale Camp there, on about eight acres deeded to Yale in 1940 by Edward C. Childs, 1928 B.A., 1932 M.F., and his family. The camp can accommodate fifty-four visitors overnight in the main lodge, four cabins, and a director's cottage. Sleeping tents in two large fields can accommodate visitors as well. The camp is mostly used by MODs, with sixty-five people visiting each week. It is powered by a new ground-based solar array. The kitchen in the main lodge is a communal kitchen licensed by the State of Connecticut.

Additionally, the 20,000-acre forestland owned and managed by the South Central Connecticut Regional Water Authority in New Haven County is one of the oldest managed forests in the western hemisphere and easily accessible from Yale's campus. Connecticut state forests and Yale's long history with the Connecticut Forest & Park Association serve as resources for student and faculty engagement as well.

LIBRARY COLLECTION

YSE students have access to the enormous holdings of the Yale University Library (YUL), which comprises fifteen million print and electronic volumes in more than a dozen different libraries and locations. The YUL is committed to acquiring whatever books and journals are needed to support Yale's teaching and research activities. The bulk of YSE materials are located online and in the Marx Science and Social Science Library, while smaller, more specialized collections, such as the Henry Solon Graves Papers and the Rachel Carson Papers, are housed in Manuscripts and Archives (in Sterling Memorial Library) and the Beinecke Rare Book and Manuscript Library. The librarian for environmental studies has an office in Marx Library (Rm. C44) and is available most weekday hours to provide assistance to students. Reference and information services are provided by experienced staff in the Marx Library. For electronic retrieval, the library has a network of databases accessible via its website, covering general environmental topics as well as the specific subject areas of forestry, soils, fish and wildlife, and water resources. Overall, Yale University Library subscribes to more than one thousand databases. Library resources outside of Yale are accessed through the Borrow Direct service as well as Interlibrary Loan. The YUL supports both EndNote and Zotero bibliographic data management tools, and the librarian for environmental studies provides instruction in both.

The YSE Library Research Guide is located at <https://guides.library.yale.edu/yse>. There are links to Orbis, Yale's main online catalog; direct links to several of the most frequently used bibliographic databases, such as BIOSIS, Web of Science, ProQuest Natural Science Collection, Environment Complete, and CAB Direct; and information ranging from instruction opportunities to online full-text journals. In-house bibliographic instruction begins during MODs and continues throughout the term. Notification of tours and group instruction sessions is posted via email; students may also contact the librarian directly (203.432.5912) to set up an individual session.

For additional information, please visit <https://web.library.yale.edu>.

COMPUTER RESOURCES

The mission of the YSE Information Technology Department (YSE-IT) is to support all aspects of computing for every member of the Yale School of the Environment community. We use and support multiple platforms, including Windows and Macintosh operating systems. Students are strongly encouraged, but not required, to

bring their own computers. Admitted students may contact the YSE-IT Helpdesk by emailing helpdesk.yse@yale.edu for advice on the selection of appropriate hardware and software. We strongly encourage the purchase of Apple Macbook Pro or Lenovo ThinkPad (T or X series) laptop computers. A robust campus network provides wireless access within all YSE buildings and throughout the Yale campus.

YSE-IT and trained student technicians from Yale's Student Technology Collaborative provide drop-in technical support for students to assist with any academic or research computer needs they may have while on campus. Weekend and after-hours student support is also available at Bass Library, within easy walking distance of the School. YSE-IT provides secure, centralized backup services for all YSE faculty, staff, and students, as well as a YSE-provisioned Dropbox account.

YSE-IT maintains a computer lab in Sage Hall, Rm. 39, with sixteen computer workstations that feature dual 24-inch displays, 3 GHz Intel i5 (quad-core) and 2.2 Xeon (10-core) processors, and at least 16 GB of RAM that were updated in the summer of 2018. The lab also features four 27-inch high-definition monitors for students who would like to utilize their own laptops.

The computer lab houses a multifunction copy/scan/fax/print device. Additional wireless student printing is available in each YSE building and throughout the Yale campus via the BluePrint (PaperCut) Printing System. Three-dimensional and wide-format printing is also available at the Yale Center for Engineering Innovation & Design (CEID) and the Yale School of Architecture.

YSE-IT maintains an inventory of equipment that students may borrow for short periods of time through an online equipment checkout system (<https://reservations.yale.edu/yse>). Equipment may be borrowed at no charge (late and replacement fees apply if equipment is returned late, lost, or damaged). Included are iPads, GPS units, digital cameras, walkie-talkies, compact audio recorders, and other equipment.

The Yale University Library is also very active in the integration of information resources in digital format. Students and faculty have online access to an extensive variety of journals and databases as well as innovative research resources such as the Digital Humanities Lab (<https://dhlab.yale.edu>).

The Marx Science and Social Science Library (<https://marx.library.yale.edu>) offers an array of digital media technologies and operates several important digital resources, including the Statistical Classroom ("StatLab"), featuring thirty machines with dual monitors, and a variety of software and databases, such as a Bloomberg Terminal. The Marx Library is also home to a full-time GIS librarian who assists students in obtaining and working with GIS datasets to support their work in any part of the globe, and to a data librarian who is available for questions or consultation about finding, using, and managing research data in the sciences and social sciences.

Faculty members have also developed many special computer applications for their projects, and some of these are available for student use in the Sage Hall computer lab.

Communications

The Office of Communications promotes the work of the Yale School of the Environment, sharing stories about its innovativeness and excellence in teaching and scholarship to a wide range of audiences. We also provide a variety of services to members of the community to help them more effectively tell their own stories.

We aim to strengthen the understanding of and deepen the discourse on environmental issues, inform the public about the ways the School is contributing to achieving a more sustainable future, and encourage the integration of those issues into strategies for business, international development, government, and nongovernmental organizations.

The communications team publicizes original research by our faculty, fellows, and students and School-sponsored events through traditional and digital media.

School news, alumni profiles, and other community updates are regularly published on YSE's website (<https://environment.yale.edu>) and distributed through newsletters and on our social media platforms, including Facebook (<https://facebook.com/EnvironmentYale>), Twitter (<https://twitter.com/YaleEnvironment>), Instagram (<https://instagram.com/EnvironmentYale>), and LinkedIn (<https://www.linkedin.com/school/environmentyale>).

The communications office publishes *Canopy* magazine, which showcases how the YSE community—including its highly engaged alumni network—is providing innovative leadership in addressing environmental challenges across the planet. It also publishes the annual report, which highlights the progress the School has made in achieving the goals defined in its Strategic Plan and the many ways the YSE community has helped to address today's urgent environmental challenges.

Other communication platforms at YSE include:

- *Yale Environment 360* (<http://e360.yale.edu>) features reporting, analysis, and opinion on global environmental issues from leading writers, scientists, policy makers, and journalists in the field. Launched in 2008, this online magazine has established a broad global audience and received numerous awards and honors.
- *Sage Magazine* (<http://sagemagazine.org>) is a student-run environmental arts and journalism publication. Through creative and informative journalism, *Sage* seeks to expand popular notions of environmentalism and bring depth and focus to the debate around pressing environmental issues.
- *Yale Environment Review* (<http://environment-review.yale.edu>) is a student-run online publication that provides concise summaries of peer-reviewed research from around the world, with a focus on topics of general interest to those engaged in environmental and natural resource management.
- The annual Environmental Film Festival at Yale (<http://effy.yale.edu>), held each spring in New Haven, is one of America's premier student-run environmental film festivals.
- Reports and newsletters from the School's centers and programs, listed online at <https://environment.yale.edu/centers>.

To contact the YSE communications office, email communications.yse@yale.edu or call 203.436.4805.

RECORDING POLICY ACKNOWLEDGMENT

In order to capture the breadth of activities that occur at YSE – and integrate the expertise of our faculty, students, and visitors into the broader environmental dialogue – Yale University frequently photographs, videotapes, and/or records events, lectures, and activities (including during alumni events) at YSE. By attending and/or participating in classes and in other YSE and University activities, those in attendance agree to the University’s use and distribution of their image and/or voice in photographs, audio, and video capture, or in electronic reproductions of such classes and activities. These images, recordings, or excerpts may be included, for example, in Yale University websites, publications, and online courses, and otherwise used to support the University’s mission.

Student Organizations

The School has many student-run interest groups. Current student groups include, but are not limited to, the Africa SIG; Asia (ASIA) SIG; Built Environment and the Environment (BE2); Business and Environment Club SIG (joint with the School of Management); the Climate Change SIG; Economic Consideration of Nature (ECON); Energy SIG; Environmental Data Science at Yale (EDSY); Environmental Justice at Yale (EJAY); Environmental Media & Arts; Fire SIG; FOOD SIG; the Forestry Club (FC); Fresh & Salty SIG; Green Chemistry SIG; GROUNDED; Health and Environment at Yale (HEY); the Industrial Environmental Management and Energy Group (IEME); a student chapter of the International Society of Tropical Foresters (ISTF); the Latin American SIG (LA SIG); LoggeRhythms; Natural Resources Extraction (NRX); Out in the Woods (OIW); Outdoor Rec Industry; PhD SIG; Recess; ROOTS SIG; SAGE Magazine; SCOPE – the Research SIG; the Yale chapter of the Society for Conservation Biology (CONBIO); Society for Ecological Restoration (SER); the Spatial Collective; Sustainability and Finance SIG; Sustainable Development in Latin America and the Caribbean (SDLAC); Take Action Tuesday; Urban Resilience for the Built and Natural Environment (URBAN Environment); WESTIES; Yale Environment Women (YEW); Yale Ethnobotany and Mycology Society (YEMS); Yale Temperate Forestry (formerly known as SAF); and the Student Affairs Committee (SAC). The activities of these groups include sponsoring guest and student lectures, organizing field trips, sponsoring workshops, organizing social events, holding conferences, and interacting with regional divisions of their respective societies. If a student is interested in starting a new SIG they should contact SAC and the Office of Student Affairs at studentaffairs.yse@yale.edu.

Funding for Master’s Student Projects and Activities

Master’s students often seek funding for research, professional activities, and social events. Sometimes the request is for an individual activity, sometimes it is on behalf of a group. Students can apply to several funds at Yale University and the Yale School of the Environment. The following are some of the more useful opportunities:

- Master’s Student Travel Fund to support attendance at a conference or symposium for networking.
- The Carpenter–Sperry Fund for attendance at a conference or symposium at which a student is giving a research talk.
- MacMillan Center for International and Area Studies, which can help bring international visitors to Yale for a lecture or a conference.
- Student Affairs Committee (SAC), which supports activities by our many student interest groups (SIGs).
- YSE Community Events Fund, administered by the Dean’s Office, which supports student events and conferences.
- Class of ’80 Student Project Fund, administered by the School’s Office of Development and Alumni Services, to enrich the quality of life of the student body.
- Graduate Student Assembly Conference Travel Fund which awards travel funds to graduate students.

Alumni Association

The YSE Alumni Association is led by an elected Alumni Association Board (AAB) of twenty to twenty five alumni who represent the School’s more than 5,000 alumni around the world. The AAB meets monthly: in-person two times per year and remotely throughout the rest of the academic year, in addition to various committee meetings as needed. The AAB is supported by staff in the YSE Office of Development and Alumni Services.

AAB members lead a number of initiatives focused on alumni-to-alumni, alumni-to-student, and alumni-to-University engagement. The AAB supports and generates efforts around diversity, equity, and inclusion at the School and among alumni; organizes field-based learning programs, educational opportunities, and volunteer opportunities for alumni; and communicates with the alumni body.

The Alumni Association Board also oversees the annual AAB nominations/elections process as well as the selection of the Distinguished Alumni and Prospect Street award recipients named at Reunion weekend each year. The YSE Alumni Association Board Scholarship is awarded annually to two current students who demonstrate outstanding community engagement and volunteer leadership. Alumni events and e-newsletters, along with the YSE magazine *Canopy*, keep alumni throughout the world in touch with each other and the School.

The YSE Alumni Association is also affiliated with the Yale Alumni Association (YAA), which serves all alumni of Yale University.

Alumni may contact the Office of Development and Alumni Services at alumni.yse@yale.edu.

Office of Career and Professional Development

<http://environment.yale.edu/careers>

The Office of Career and Professional Development (CPD) seeks to inspire and prepare all students to pursue high-impact environmental careers aligned with their individual

abilities, experience, and interests. Its mission is to proactively educate students to maximize their entire YSE experience for impactful careers and lives; cultivate strong relationships with leading domestic and international environmental employers; and support career-related initiatives across YSE.

The CPD's diverse resources, programs, and services enable users to develop key skills needed to present themselves professionally on the job market, develop and refine meaningful career goals, and chart a strategy for conducting effective job and internship searches. We work with students on an ongoing basis through individual advising appointments as well as through workshops conducted by staff and other career development and environmental professionals.

CAREER AND PROFESSIONAL DEVELOPMENT RESOURCES

Career Advising and Peer Advising

Through individual career advising appointments with our professional team, and drop-in hours with trained peer reviewers, students work with CPD on:

- General career advising (strategy, focus, vision)
- LinkedIn profile development and reviews
- Résumé reviews
- Cover letter reviews
- CV reviews
- Converting a CV to a résumé and converting a résumé to a CV
- Personal statement reviews for Ph.D. program and fellowship applications
- Networking advice at Yale and beyond
- Online tools orientation (YSE Next, LinkedIn, Yale Cross Campus, AlumniFire)
- Interview skills and preparation coaching
- Mock interviews
- Summer experience planning guidance and funding opportunities
- Salary negotiation strategies

YSE Next Online Career Development System

- Access more than 150 YSE-focused jobs and internships added each month
- Publish your résumé for review by alumni and employers
- Create job and internship alerts
- Apply directly online for jobs/internships of interest
- Schedule career counseling appointments
- RSVP for upcoming events
- Access exclusive career development resources

YSE Résumé

We work with students individually and through workshops to write and design a targeted professional résumé. We provide an official *YSE Résumé Template* and *Résumé Content, Style, and Format Guidelines*.

Workshops and Information Sessions

These programs are designed to guide students through phases of career readiness in line with internship, job, and further-study timelines. Sample programs:

- Building Your LinkedIn Profile
- Résumé Workshop with Peer Review
- Hive Mind: Networking
- Getting Better on Video
- Leveraging Social Media for the Job Search
- Applying for EDF Climate Corps Fellowships
- Cover Letter Writing and Peer Review
- LinkedIn Photobooth
- Interview Skills Workshop: Behavioral and Traditional Interview Questions
- Federal Job Applications
- U.S. Presidential Management Fellowship Information Session
- Applying for the Ph.D.
- How to Work a Career Fair
- Salary and Job Offer Negotiations

Career Fairs and Regional Events

YSEinDC: Approximately 100 students attend this annual two-day program in Washington, D.C., home to the largest YSE alumni population. The event includes employer site visits, preselected job and internship interviews, small group information sessions, alumni networking dinners, and an alumni-student networking reception.

All Ivy Environmental and Sustainable Development Career Fair: Up to eighty employers in a range of fields and more than 1,000 students participate in this annual fair jointly sponsored by the eight Ivy League institutions, which is open to all graduate students, undergraduate students, and alumni from partner schools. The fair is held at Columbia University in New York.

Networking nights and career fairs hosted by partner career offices at Yale: Sample programs include STEM career fair, social impact career events, energy employer information sessions, and international development career panels.

On-Campus Recruiting

Connect with employers during on-campus information sessions, informational interviews, and interview opportunities.

Alumni Connections

YSE LinkedIn Group: The Office of Development and Alumni Services maintains the Yale School of the Environment LinkedIn group.

AlumniFire: A platform that blends professional networking provided by services like LinkedIn with event sharing and discussion opportunities on platforms like Facebook and the functions of a job search site.

Yale Cross Campus: A newly launched platform connecting Yale alumni to students, and alumni to alumni for networking and career development.

Professional Skills Modules (PSMs)

All Master of Environmental Management (MEM) students at YSE are required to complete four (4) Professional Skills Modules (PSMs) in order to graduate. Professional Skills Modules provide students with opportunities to strengthen their proficiency in core areas considered essential for all environmental professionals.

We have designed a suite of intensive, interactive workshops that are designed to help students thrive in their work at YSE and in their future careers. The workshops are held on Fridays throughout the year and usually run from 9am until 2pm. Each workshop is open to all YSE students, although if space is limited, MEM students will be given preference, given their graduation requirement.

PROFESSIONAL SKILLS MODULE TOPICS & OBJECTIVES

- 1. Verbal Communication** This workshop is designed to teach students how to give clear and compelling oral presentations. Facilitators introduce participants to best practices and useful frameworks and then give students the chance to practice, providing iterative feedback on individual presentations.
- 2. Visual Communication of Data** Through the Visual Communication workshop, students learn core principles for visually conveying data and other complex information. Students explore different ways to use charts, graphs, tables, infographics, and other methods of creating visual representations of data to engage with different audiences. Using pre-work exercises and interactive group activities, participants emerge ready to communicate better visually.
- 3. Negotiation** This module provides an introduction to general negotiation topics through a variety of exercises. Content includes the concept of negotiation, strategies for preparing to negotiate, positions/interests, best alternatives to negotiated agreements, and more.
- 4. Cultural Competence** The goals of this workshop are to cultivate an understanding of why cultural competence across differences – including those based on experience, expertise, values and other factors – is important and to understand how each of us can work across differences and develop skills for interrupting bias effectively in the workplace.
- 5. Fundraising** This workshop uses a mix of lectures, discussions, and role-plays to demystify the fundraising process and share key approaches for attracting people to invest in your work. Students leave with an understanding of how to develop and steward relationships with funders, how to assess funding landscapes, and how to make funding asks.

6. Project Management Rather than review an existing guide to project management, this workshop explores a number of key questions that practitioners use when tackling and managing environmental challenges. The instructors draw examples and lessons learned from their work across scales, sectors, cultures and continents, as well as from experiences of workshop participants.

7. Stakeholder Engagement This module introduces students to using stakeholder engagement processes, beginning with the conceptual basics: why, how, when, and what form of engagement to use. They then learn the practical steps of how to design, govern, fund, manage, evaluate, and end a successful stakeholder process.

8. Facilitation This session provides an overview of key strategies and best practices to help participants make the most of their time with project partners and colleagues. It focuses on how to design and manage well-run, collaborative meetings to accomplish shared goals.

9. Environmental Career Strategies This interactive workshop guides participants through a series of conversations and exercises designed to help students develop personal career strategies that will assist them in identifying, joining, and participating in environmental professional communities of practice to improve participants' chance of launching and advancing in a high impact career that also meets personal goals and preferences.

Summer Experience Program

A ten- to twelve-week summer experience is required of all master's candidates at YSE. Summer experiences provide the opportunity to align research and practice, enhance professional and technical skills, and gain professional confidence and experience. Students are assisted by the CPD, faculty, and alumni in locating or designing opportunities that meet their individual needs and interests.

Given the School's strong ties with natural resource, environmental, business/ environment, and conservation employers worldwide, the possibilities are vast. The summer experience typically occurs between the first and second years of the program; occasionally, however, it lasts for longer periods. Opportunities include thesis-related fieldwork, traditional work experiences, structured internship programs, and independent or entrepreneurial projects.

YSE 006, Summer Internship/Research The summer experience is an important opportunity for students to apply knowledge and skills gained during their first year of study, gain professional experience and build networks, and investigate potential career paths. Experiences are ten and twelve weeks in duration, typically in the summer between the first and second years of the program. Students have latitude in designing an experience aligned with individual academic and career goals. Students are responsible for securing or creating their summer experience with appropriate faculty supervision, applying for and securing summer funding, and completing appropriate online forms before and after in order to receive course credit. Required of all master's candidates. 0 credits.

2021 Summer Experiences

The following list, compiled by the CPD, shows the rich and diverse experiences that YSE students had during a recent summer. Data for other years is available online at <http://environment.yale.edu/careers/data>. For more information, please contact Senior

Associate Director Kathryn Douglas at 203.436.4830 or kathryn.douglas@yale.edu. The School and its students thank donors, host organizations, and supervisors for making these valuable professional experiences possible.

EXPERIENCES BY DEGREE DESIGNATION

Master of Environmental Management

BUSINESS AND THE ENVIRONMENT

- Allbirds, Corporate Sustainability Fellow
- Capitals Coalition, Business and the Environment Researcher
- Center for Business and the Environment (Yale University), Business and the Environment Fellow
- Citizens Bank, Corporate Sustainability Fellow
- City of New Haven, Climate Change Mitigation and Adaptation Fellow
- Colgate-Palmolive, Corporate Sustainability Fellow
- Con Edison, Energy and the Environment Intern
- Google, Business and the Environment Specialist
- Guidewire Software, Business and the Environment Analyst
- Hannon Armstrong, Environmental Investing Intern
- International Paper, Corporate Sustainability Intern
- Just Salad, Corporate Sustainability Fellow
- Lumentum, Industrial Ecology Intern
- Micron Technology, Corporate Sustainability Intern
- National Renewable Energy Laboratory, Energy and the Environment Associate
- Nomura Greentech, Environmental Investing Associate
- OnePointFive, Corporate Sustainability Consultant (2)
- PopSockets, Corporate Sustainability Intern
- Portland General Electric, Energy and the Environment Intern
- School of Management (Yale University), Information Systems/G.I.S. Researcher
- School of the Environment (Yale University), Food and Agriculture Researcher
- School of the Environment (Yale University), Global Climate Change Science and Policy Researcher
- School of the Environment (Yale University), Industrial Ecology Researcher
- Sodexo, Corporate Sustainability Intern
- Subaru of America, Inc., Business and the Environment Specialist
- Tesla, Inc., Energy and the Environment Intern
- The Vegetarian Butcher, Waste Management Intern
- World Business Council for Sustainable Development, Business and the Environment Intern (4)
- World Business Council for Sustainable Development, Environmental Investing Intern
- World Business Council for Sustainable Development, Global Climate Change Science and Policy Intern

- World Resources Institute, Business and the Environment Intern
- World Resources Institute, Water Resource Management Intern

CLIMATE CHANGE SCIENCE AND SOLUTIONS

- Center for Climate and Energy Solutions, Climate Change Mitigation and Adaptation Intern
- CitySeed, Food and Agriculture Fellow
- European Bank for Reconstruction and Development, Environmental Economics Intern
- French Embassy to the United States, Food and Agriculture Intern
- Nomura Greentech, Environmental Investing Associate
- Office of the Auditor General of Canada, Climate Change Mitigation and Adaptation Intern
- The Years Project, Media and Communication Intern
- United States Environmental Protection Agency, Environmental Law and Policy Intern
- Warburg Pincus, Environmental Investing Fellow
- World Resources Institute, Business and the Environment Intern
- World Resources Institute, Environmental Law and Policy Intern

ECOSYSTEM MANAGEMENT AND CONSERVATION

- 12Tree, Food and Agriculture Intern
- American Farmland Trust, Climate Change Mitigation and Adaptation Intern
- Conservation Law Foundation, Environmental Law and Policy Intern
- Environmental Leadership and Training Initiative (Yale University), Forestry Researcher
- Floating e.V., Water Resource Management Fellow
- Footprints Africa, Environmental Economics Intern
- Mesa Foods, Food and Agriculture Founder
- National Forest Foundation, Land Management and Land-Use Planning Fellow
- National Parks Conservation Association, Ecosystem and Wildlife Conservation Intern
- School of the Environment (Yale University), Ecosystem and Wildlife Conservation Researcher
- School of the Environment (Yale University), Food and Agriculture Researcher
- The Nature Conservancy, Land Management and Land-Use Planning Fellow
- Trust for Public Land, Land Management and Land-Use Planning Intern
- Ucross High Plains Stewardship Initiative (Yale University), Ecosystem and Wildlife Conservation Fellow
- Ucross High Plains Stewardship Initiative (Yale University), Land Management and Land-Use Planning Fellow

- United States Department of State, Global Climate Change Science and Policy Intern
- Urban Resources Initiative (Yale University), Urban Ecology Intern

ENERGY AND THE ENVIRONMENT

- BlueHub Energy, Energy and the Environment Intern
- City of New Haven, Climate Change Mitigation and Adaptation Fellow
- City of Seattle, Energy and the Environment Fellow
- Con Edison, Energy and the Environment Intern
- Concentrix, Corporate Sustainability Fellow
- Connecticut Department of Energy and Environmental Protection, Environmental Law and Policy Associate
- European Bank for Reconstruction and Development, Environmental Economics Intern
- Hannon Armstrong, Environmental Investing Intern
- National Renewable Energy Laboratory, Energy and the Environment Associate
- Plankton Energy, Energy and the Environment Associate
- Portland General Electric, Energy and the Environment Intern
- Rockefeller Foundation, Energy and the Environment Intern
- Spring Lane Capital, Environmental Investing Associate
- Tesla, Inc., Energy and the Environment Intern
- United States Environmental Protection Agency, Energy and the Environment Intern
- UPROSE, Environmental Justice Fellow
- Warburg Pincus, Environmental Investing Fellow
- Wayfair, Business and the Environment Fellow
- World Business Council for Sustainable Development, Business and the Environment Intern

ENVIRONMENTAL POLICY ANALYSIS

- Anthropocene Alliance, Climate Change Mitigation and Adaptation Researcher
- Center for Business and the Environment (Yale University), Energy and the Environment Fellow
- CitySeed, Food and Agriculture Fellow
- Connecticut Department of Energy and Environmental Protection, Waste Management Associate
- Dakshin Foundation, Environmental Education and Training Intern
- Google, Business and the Environment Specialist
- Hill Country Alliance, Water Resource Management Researcher
- Maine Governor's Office, Climate Change Mitigation and Adaptation Intern
- Malama Maunalua, Coastal and Watershed Systems Researcher
- New York State Energy Research and Development, Energy and the Environment Associate

- Oregon Wild, Environmental Law and Policy Intern
- Partnership on Rangeland Planning and Forest Conservation, Information Systems/G.I.S. Researcher
- Plankton Energy, Energy and the Environment Associate
- School of the Environment (Yale University), Global Climate Change Science and Policy Researcher
- United Nations Development Program, Environmental Law and Policy Intern
- United States Agency for International Development, Food and Agriculture Intern
- United States Environmental Protection Agency, Environmental Law and Policy Intern
- UPROSE, Environmental Justice Fellow
- White House Council on Environmental Quality, Environmental Law and Policy Intern
- World Resources Institute, Environmental Law and Policy Intern
- World Resources Institute, Water Resource Management Intern

INDUSTRIAL ECOLOGY AND GREEN CHEMISTRY

- Concentrix, Corporate Sustainability Fellow
- Google, Corporate Sustainability Fellow
- Lumentum, Industrial Ecology Intern
- OnePointFive, Corporate Sustainability Consultant
- School of Management (Yale University), Information Systems/G.I.S. Researcher
- School of the Environment (Yale University), Industrial Ecology Researcher
- The Recycling Partnership, Waste Management Manager
- The Vegetarian Butcher, Waste Management Intern

PEOPLE, EQUITY, AND THE ENVIRONMENT

- Dakshin Foundation, Environmental Education and Training Intern
- Lyme Timber, Carbon and Forest Finance Researcher
- School of the Environment (Yale University), Ecosystem and Wildlife Conservation Researcher
- School of the Environment (Yale University), Environmental Justice Researcher
- Shute, Mihaly & Weinberger, Environmental Law and Policy Associate
- The Nature Conservancy, Land Management and Land-Use Planning Fellow
- United States Department of State, Climate Change Mitigation and Adaptation Intern
- United States Forest Service, Green Design and the Built Environment Researcher

SELF-DESIGN

- Brattleboro Planning Department, Land Management and Land-Use Planning Intern
- Massachusetts Land Court, Land Management and Land-Use Planning Intern
- Micron Technology, Corporate Sustainability Intern
- Pepsico, Food and Agriculture Intern

- Rockefeller Foundation, Energy and the Environment Intern
- Urban Resources Initiative (Yale University), Environmental Education and Training Intern

URBAN

- City of Dallas, Energy and the Environment Fellow
- City of New Haven, Urban and Regional Planning Fellow
- Clean Water Action, Environmental Justice Fellow
- Maine Governor's Office, Environmental Law and Policy Intern
- Texas Parks and Wildlife Department, Green Design and the Built Environment Intern
- Urban Resources Initiative (Yale University), Environmental Education and Training Intern

WATER RESOURCE SCIENCE AND MANAGEMENT

- Council for Watershed Health, Water Resource Management Intern
- Hill Country Alliance, Water Resource Management Researcher
- National Parks Service, Land Management and Land-Use Planning Intern
- Partnership on Rangeland Planning and Forest Conservation, Information Systems/G.I.S. Researcher
- PopSockets, Corporate Sustainability Intern
- Restore America's Estuaries, Water Resource Management Fellow
- Stockholm Environment Institute, Water Resource Management Intern
- United States Environmental Protection Agency, Water Resource Management Intern

Master of Forestry

- The Forest School (Yale University), Forestry Apprentice (5)
- The Nature Conservancy, Land Management and Land-Use Planning Fellow
- Urban Resources Initiative (Yale University), Forestry Intern
- Urban Resources Initiative (Yale University), Urban Ecology Intern

Master of Environmental Science

- Center for Climate and Energy Solutions, Global Climate Change Science and Policy Intern
- Center for Green Chemistry and Green Engineering (Yale University), Industrial Ecology Researcher
- Clean Energy Ventures, Environmental Investing Intern
- Peabody Museum of Natural History (Yale University), Environmental Education and Training Researcher
- School of the Environment (Yale University), Climate Change Mitigation and Adaptation Researcher
- School of the Environment (Yale University), Coastal and Watershed Systems Researcher

- School of the Environment (Yale University), Ecosystem and Wildlife Conservation Researcher (8)
- School of the Environment (Yale University), Environmental Health Researcher
- School of the Environment (Yale University), Environmental Law and Policy Researcher
- School of the Environment (Yale University), Food and Agriculture Researcher (2)
- School of the Environment (Yale University), Social Ecology Researcher (3)
- Wildlife Institute of India, Ecosystem and Wildlife Conservation Researcher

Master of Forestry Science

- Environmental Leadership and Training Initiative (Yale University), Ecosystem and Wildlife Conservation Researcher
- School of the Environment (Yale University), Ecosystem and Wildlife Conservation Researcher
- School of the Environment (Yale University), Forestry Researcher (2)

IMMEDIATELY FOLLOWING GRADUATION

Each year YSE graduates enjoy employment success in environmental science, policy, and management within the United States and around the world, pursue entrepreneurial ventures, and continue their education with further study. Details including salary information on the most recent as well as previous classes can be found at <http://environment.yale.edu/careers/data>.

Summary data from the class of 2021 master's graduates six months after graduation :

Private (Business/Consulting)	36%
Private (Business/Law)	1%
Nonprofit/Nongovernmental	31%
Government/Public Sector	21%
Academic (K–Higher Education)	6%
Further Study	3%
Self-Employed/Social Entrepreneurial	2%

SIX MONTHS AFTER GRADUATION

2021 Master's Degree Graduates, First Destination Employment by Sector

ACADEMICS (K–HIGHER EDUCATION)

Clean Energy Coordinator, Yale University, New Haven, Conn.

Forest Manager, Yale University, New Haven, Conn.

Postgraduate Fellow, Yale School of the Environment, New Haven, Conn.

FURTHER STUDY

Fox International Fellow, Fox International Fellowship - University of Ghana, Accra, Ghana

Fox International Fellow, Fox International Fellowship - National University of Singapore, Singapore

Law Student, University of Virginia, Charlottesville, Va.
Law Student, Villanova University, Villanova, Pa.
Ph.D. Student, Ecology Evolution Environment Society, Dartmouth College,
Hanover, N.H.
Ph.D. Student, Ecology, Evolution, Behavior, University of Minnesota, St. Paul, Minn.
Ph.D. Student, Horticulture and Natural Resources, Kansas State University,
Manhattan, Kans.
Ph.D. Student, Integrative Biology, University of Wisconsin – Madison, Wisc.
Ph.D. Student, Yale School of the Environment, New Haven, Conn.
Ph.D. Student, Yale School of the Environment, New Haven, Conn.

GOVERNMENT / INTERGOVERNMENTAL / PUBLIC SECTOR

Biologist, Environmental Protection Agency, Office of Water, Washington, D.C.
Director, Strategic Initiatives, White House, U.S. Government, Washington, D.C.
Energy Industry Analyst, Federal Energy Regulatory Commission, Washington D.C.
Forester, Washington Department of Natural Resources, Tumwater, Wash.
Law Clerk, Pacific Architects & Engineers (contracted at U.S. Department of Justice),
Denver, Colo.
Law Clerk, United States Federal Courts, Huntington, W.Va.
National Consultant, United Nations Development Programme, Mandaluyong City,
The Philippines
ORISE Fellow, Environmental Protection Agency, Oak Ridge Institute for Science and
Education (ORISE), Washington, D.C.
Policy Aide, House Natural Resources Committee, Washington, D.C.
Program Analyst, World Bank, Washington, D.C.
Researcher/Consultant, Yale School of Public Health (contracted from the United
Nations Office for the Coordination of Humanitarian Affairs), New Haven, Conn.

NOT-FOR-PROFIT / NON-GOVERNMENTAL ORGANIZATION

Climate Impact Fund Fellow, VertueLab, New Haven, Conn.
Community Relations Manager, The Nature Conservancy, Cle Elum, Wash.
Consultant - Deforestation Research, CERES, New Haven, Conn.
Consultant, International Union for Conservation of Nature (IUCN), Dar Es Salaam,
Tanzania
Consultant, Yale Environmental Leadership Training Initiative, New Haven, Conn.
Deputy Director of Policy, Carbon180, Washington, D.C.
Government Relations Manager, National Ocean Protection Coalition, New Haven,
Conn.
Gruber Fellow, Human Rights Watch, New York, N.Y.
Pathways to Planetary Health Program Director, Garrison Institute, Garrison, N.Y.
Philanthropy Fellow; Program Research Analyst, University of California at Berkeley
Haas School of Business, Berkeley, Calif.
Post-Graduate Research Fellow, Clean Air Task Force, Brookings, S.Dak.
Producer, KCET/PBS SoCal, Los Angeles, Calif.
Program Associate & Special Assistant to the President, American Farmland Trust,
Louisville, Ky.
Research Analyst, Environmental Defense Fund, Washington, D.C.
Research Analyst, Resources for the Future, Washington, D.C.
Riparian Restoration Ecologist, The Lands Council, Spokane, Wash.

Senior Associate, Carbon-free Electricity, Rocky Mountain Institute, Boulder, Colo.
 Senior Associate, Decarbonizing Industrial Supply Chain Energy, Clean Energy Buyers Alliance, Washington, D.C.
 Senior Director, Outdoor Recreation Roundtable, Washington, D.C.
 Senior Manager of Climate and Environment, InterAction, Washington, D.C.
 Senior Oceans Campaigner, Greenpeace USA, Washington, D.C.
 Tropical Forest Restoration Fellow, Yale University, New Haven, Conn.

PRIVATE (BUSINESS / CONSULTING / LAW)

Analyst, Cadmus Group, Roanoke, Va.
 Analyst, New Forests, San Francisco, Calif.
 Associate Attorney (pending admission), Milbank LLP, New York, N.Y.
 Associate Project Developer, EDF Renewables, Minneapolis, Minn.
 Associate, Investments, Hannon Armstrong, Washington, D.C.
 Associate, McKinsey & Company, Boston, Mass.
 Consultant, Ernst & Young LLP, San Francisco, Calif.
 Consultant, EY Parthenon, New York, N.Y.
 Deputy Director of Resilience Services, Climate Resilience Consulting, Chicago, Ill.
 ESG Client Associate, S&P Global, New York, N.Y.
 ESG Researcher, MSCI, New York, N.Y.
 International Development Research Specialist, ICF, Griswold, Conn.
 Junior Consultant, Roland Berger, Munich, Germany
 Life Cycle Associate, SCS Global Services, Emeryville, Calif.
 Manager, Execution, Amp Energy, Washington, D.C.
 Project Finance Associate, Rabobank, New York, N.Y.
 Research and Analytics Associate, Calyx Global, Peekskill, N.Y.
 Research and Policy Analyst, Eastern Research Group, Washington, D.C.
 Senior Associate, Climate Finance Advisors, Washington, D.C.
 Senior Consultant, Ernst & Young LLP, New York, N.Y.
 Senior Manager, Amp Energy, Portland, Maine
 Solar and Storage Associate, Sol Systems, Washington, D.C.
 Staff Scientist, The Sigma Group, Milwaukee, Wisc.
 Sustainability Specialist, Calpine Energy Solutions, Houston, Tex.
 Vice President, Environmental Sustainability, Citizens Bank, Johnston, R.I.
 Water Resources Engineer, Tetra Tech, San Diego, Calif.

Leave of Absence

Students are expected to follow a continuous course of study at the School of the Environment. However, a student who wishes or needs to interrupt study temporarily may request a leave of absence. There are three types of leave—personal, medical, and parental—all of which are described below. The general policies that apply to a leave of absence are:

1. Any student who is contemplating a leave of absence should see the assistant dean of student affairs to discuss the necessary application procedures.
2. All leaves of absence must be approved by the assistant dean of student affairs or the senior associate dean of academic affairs. Medical leaves also require the written recommendation of a physician on the staff of Yale Health, as described below.

3. A student may be granted a leave of absence of one to two years. Any leave approved by the assistant dean of student affairs or the senior associate dean of academic affairs will be for a specified period.
4. International students who apply for a leave of absence must consult with OISS regarding their visa status.
5. A student on a leave of absence may complete outstanding work in courses for which extensions have been granted. The student may not, however, fulfill any other degree requirements during the time on leave.
6. A student on a leave of absence is not eligible for financial aid, including loans; and in most cases, student loans are not deferred during periods of non-enrollment.
7. A student on a leave of absence is not eligible for the use of any University facilities normally available to enrolled students.
8. A student on leave of absence may continue to be enrolled in Yale Health by purchasing coverage through the Student Affiliate Coverage plan. In order to secure continuous coverage from Yale Health, enrollment in this plan must be requested prior to the beginning of the term in which the student will be on leave. If a leave of absence is granted during the term, the student must request Yale Health Affiliate Coverage enrollment within thirty days of the date the registrar was notified of the leave. Coverage is not automatic; enrollment forms are available from the Member Services Department of Yale Health, 203.432.0246, or can be downloaded from the Yale Health website (<http://yalehealth.yale.edu>).
9. A student on a leave of absence does not have to file a formal application for readmission. However, the student must notify the assistant dean of student affairs or the senior associate dean of academic affairs in writing of the intention to return at least eight weeks prior to the end of the approved leave. In addition, a returning student who wishes to be considered for financial aid must submit appropriate financial aid applications to the School's financial aid office to determine eligibility.
10. A student on a leave of absence who does not return at the end of an approved leave, and does not request and receive an extension from the dean, is automatically dismissed from the School.

Personal leave of absence A student who wishes or needs to interrupt study temporarily because of personal exigencies may request a personal leave of absence. The general policies governing all leaves of absence are described above. A student who is current with degree requirements is eligible for a personal leave after satisfactory completion of at least one term of study. Personal leaves cannot be granted retroactively and normally will not be approved after the tenth day of a term.

To request a personal leave of absence, the student must apply in writing before the beginning of the term for which the leave is requested, explaining the reasons for the proposed leave and stating both the proposed start and end dates of the leave, and the address at which the student can be reached during the period of the leave. If the assistant dean of student affairs and the senior associate dean of academic affairs find the student to be eligible, the leave will be approved. In any case, the student will be informed in writing of the action taken. A student who does not apply for a personal leave of absence, or whose application for a leave is denied, and who does not register for any term, will be considered to have withdrawn from the School.

Medical leave of absence A student who must interrupt study temporarily because of illness or injury may be granted a medical leave of absence with the approval of the assistant dean of student affairs and the senior associate dean of academic affairs, on the written recommendation of a physician on the staff of Yale Health. The general policies governing all leaves of absence are described above. A student who is making satisfactory progress toward degree requirements is eligible for a medical leave any time after matriculation. The final decision concerning a request for a medical leave of absence will be communicated in writing by the assistant dean of student affairs.

The School of the Environment reserves the right to place a student on a mandatory medical leave of absence when, on recommendation of the director of Yale Health or the chief of the Mental Health and Counseling department, the dean of the School determines that, because of a medical condition, the student is a danger to self or others, the student has seriously disrupted others in the student's residential or academic communities, or the student has refused to cooperate with efforts deemed necessary by Yale Health and the dean to make such determinations. Each case will be assessed individually based on all relevant factors, including, but not limited to, the level of risk presented and the availability of reasonable modifications. Reasonable modifications do not include fundamental alterations to the student's academic, residential, or other relevant communities or programs; in addition, reasonable modifications do not include those that unduly burden University resources.

An appeal of such a leave must be made in writing to the dean of the School no later than seven days from the effective date of the leave.

An incident that gives rise to voluntary or mandatory leave of absence may also result in subsequent disciplinary action.

A student who is placed on medical leave during any term will have tuition adjusted according to the same schedule used for withdrawals (see Tuition Rebate and Financial Aid Refund Policy). Before re-registering, a student on medical leave must secure written permission to return from a Yale Health physician.

Leave of absence for parental responsibilities A student who wishes or needs to interrupt study temporarily for reasons of pregnancy, maternity care, or paternity care may be granted a leave of absence for parental responsibilities. The general policies governing all leaves of absence are described above. A student who is making satisfactory progress toward degree requirements is eligible for parental leave any time after matriculation.

Any student planning to have or care for a child is encouraged to meet with the assistant dean of student affairs to discuss leaves and other short-term arrangements. For many students, short-term arrangements rather than a leave of absence are possible. Students living in University housing units are encouraged to review their housing contract and the related policies of the Yale Housing before applying for a parental leave of absence. Students granted a parental leave may continue to reside in University housing to the end of the academic term for which the leave was first granted, but no longer.

U.S. Military Leave Readmissions Policy

Students who wish or need to interrupt their studies to perform U.S. military service are subject to a separate U.S. military leave readmissions policy. In the event a student withdraws or takes a leave of absence from the School of the Environment to serve in the U.S. military, the student will be entitled to guaranteed readmission under the following conditions:

1. The student must have served in the U.S. Armed Forces for a period of more than thirty consecutive days;
2. The student must give advance written or oral notice of such service to the assistant dean of student affairs or the senior associate dean of academic affairs. In providing the advance notice the student does not need to indicate an intention to return. This advance notice need not come directly from the student, but rather, can be made by an appropriate officer of the U.S. Armed Forces or official of the U.S. Department of Defense. Notice is not required if precluded by military necessity. In all cases, this notice requirement can be fulfilled at the time the student seeks readmission, by submitting an attestation that the student performed the service.
3. The student must not be away from the School to perform U.S. military service for a period exceeding five years (this includes all previous absences to perform U.S. military service but does not include any initial period of obligated service). If a student's time away from the School to perform U.S. military service exceeds five years because the student is unable to obtain release orders through no fault of the student or the student was ordered to or retained on active duty, the student should contact the assistant dean of student affairs to determine if the student remains eligible for guaranteed readmission.
4. The student must notify the School within three years of the end of the U.S. military service of the intention to return. However, a student who is hospitalized or recovering from an illness or injury incurred in or aggravated during the U.S. military service has up until two years after recovering from the illness or injury to notify the School of the intent to return.
5. The student cannot have received a dishonorable or bad conduct discharge or have been sentenced in a court-martial.

A student who meets all of these conditions will be readmitted for the next term, unless the student requests a later date of readmission. Any student who fails to meet one of these requirements may still be readmitted under the general readmission policy but is not guaranteed readmission.

Upon returning to the School, the student will resume education without repeating completed course work for courses interrupted by U.S. military service. The student will have the same enrolled status last held and with the same academic standing. For the first academic year in which the student returns, the student will be charged the tuition and fees that would have been assessed for the academic year in which the student left the institution. Yale may charge up to the amount of tuition and fees other students are assessed, however, if veteran's education benefits will cover the difference between the amounts currently charged other students and the amount charged for the academic year in which the student left.

In the case of a student who is not prepared to resume studies with the same academic status at the same point where the student left off or who will not be able to complete the program of study, the School of the Environment will undertake reasonable efforts to help the student become prepared. If after reasonable efforts, the School determines that the student remains unprepared or will be unable to complete the program, or after the School determines that there are no reasonable efforts it can take, the School may deny the student readmission.

Emergency Suspension

The dean of the School of the Environment, or a delegate of the dean, may place a student on an emergency suspension from residence or academic status when (1) the student has been arrested for or charged with serious criminal behavior by law enforcement authorities; or (2) the student allegedly violated a disciplinary rule of the School and the student's presence on campus poses a significant risk to the safety or security of members of the community.

Following an individualized risk and safety analysis, the student will be notified in writing of the emergency suspension. A student who is notified of an emergency suspension will have twenty-four hours to respond to the notice. The emergency suspension will not be imposed prior to an opportunity for the student to respond unless circumstances warrant immediate action for the safety and security of members of the community. In such cases, the student will have an opportunity to respond after the emergency suspension has been imposed.

When a student in the School is placed on an emergency suspension, the matter will be referred for disciplinary action in accordance with school policy. Such a suspension may remain in effect until disciplinary action has been taken with regard to the student; however, it may be lifted earlier by action of the dean or dean's delegate, or by the disciplinary committee after a preliminary review.

Freedom of Expression

The Yale School of the Environment is committed to the protection of free inquiry and expression in the classroom and throughout the School community. In this, the School reflects the University's commitment to and policy on freedom of expression as eloquently stated in the Woodward Report (Report of the Committee on Freedom of Expression at Yale, 1974). See <https://studentlife.yale.edu/guidance-regarding-free-expression-and-peaceable-assembly-students-yale>.

YALE UNIVERSITY RESOURCES AND SERVICES

A Global University

Global engagement is core to Yale's mission as one of the world's great universities. Yale aspires to:

- Be the university that best prepares students for global citizenship and leadership
- Be a worldwide research leader on matters of global import
- Be the university with the most effective global networks

Yale's engagement beyond the United States dates from its earliest years. The University remains committed to attracting the best and brightest from around the world by offering generous international financial aid packages, conducting programs that introduce and acclimate international students to Yale, and fostering a vibrant campus community.

Yale's globalization is guided by the vice president for global strategy, who is responsible for ensuring that Yale's broader global initiatives serve its academic goals and priorities, and for enhancing Yale's international presence as a leader in liberal arts education and as a world-class research institution. The vice president works closely with academic colleagues in all of the University's schools and provides support and strategic guidance to the many international programs and activities undertaken by Yale faculty, students, and staff.

Teaching and research at Yale benefit from the many collaborations underway with the University's international partners and the global networks forged by Yale across the globe. International activities across all Yale schools include curricular initiatives that enrich classroom experiences from in-depth study of a particular country to broader comparative studies; faculty research and practice on matters of international importance; the development of online courses and expansion of distance learning; and the many fellowships, internships, and opportunities for international collaborative research projects on campus and abroad. Together these efforts serve to enhance Yale's global educational impact and are encompassed in the University's global strategy.

The Office of International Affairs (<https://world.yale.edu/oia>) provides administrative support for the international activities of all schools, departments, centers, and organizations at Yale; promotes Yale and its faculty to international audiences; and works to increase the visibility of Yale's international activities around the globe.

The Office of International Students and Scholars (<https://oiss.yale.edu>) hosts orientation programs and social activities for the University's international community and is a resource for international students and scholars on immigration matters and other aspects of acclimating to life at Yale.

The Yale Alumni Association (<https://alumni.yale.edu>) provides a channel for communication between the alumni and the University and supports alumni organizations and programs around the world.

Additional information may be found on the “Yale and the World” website (<https://world.yale.edu>), including resources for those conducting international activities abroad and links to international initiatives across the University.

Housing

The Yale Housing Office has dormitory and apartment units available for graduate and professional students. Dormitories are single-occupancy and two-bedroom units of varying sizes and prices. They are located across the campus, from Edward S. Harkness Memorial Hall, serving the medical campus, to Helen Hadley Hall and the newly built 272 Elm Street, serving the central/science campus. Unfurnished apartments consisting of efficiencies and one-, two-, and three-bedroom apartments for singles and families are also available. Family housing is available in Whitehall and Esplanade Apartments. The Housing website (<https://housing.yale.edu>) is the venue for graduate housing information and includes dates, procedures, facility descriptions, floor plans, and rates. Applications for the new academic year are available beginning April 20 and can be submitted directly from the website with a Yale NetID.

The Yale Housing Office also manages the Off Campus Living listing service (<http://offcampusliving.yale.edu>; 203.436.9756), which is the exclusive Yale service for providing off-campus rental and sales listings from New Haven landlords. This secure system allows members of the Yale community to search rental listings, review landlord/property ratings, and search for a roommate in the New Haven area. On-campus housing is limited, and members of the community should consider off-campus options. Yale University discourages the use of Craigslist and other third-party nonsecure websites for off-campus housing searches.

The Yale Housing Office is located in Helen Hadley Hall (HHH) at 420 Temple Street and is open from 9 a.m. to 4 p.m., Monday through Friday; 203.432.2167.

Dining

Yale Hospitality has tailored its services to meet the particular needs of graduate and professional school students by offering meal plan options that allow flexibility and value. For up-to-date information on all options, costs, and residential and retail dining locations, visit <https://hospitality.yale.edu>. Inquiries concerning food services should be addressed to Yale Hospitality, 246 Church Street, PO Box 208261, New Haven CT 06520-8261; email, yale.hospitality@yale.edu; tel., 203.432.0420.

Security

As with most universities in urban settings, the security of persons and property is a primary concern of the School of the Environment. The University police and the fire marshal, in cooperation with the police and fire services of the City of New Haven, strive constantly to maintain a safe environment for the Yale community. At an orientation session during the summer modules, incoming students receive detailed

information on emergency communications, personal safety tips, and other ways to protect themselves, equipment, and buildings.

Health Services

The Yale Health Center is located on campus at 55 Lock Street. The center is home to Yale Health, a not-for-profit, physician-led health coverage option that offers a wide variety of health care services for students and other members of the Yale community. Services include student health, gynecology, mental health, pediatrics, pharmacy, blood draw, radiology, a seventeen-bed inpatient care unit, a round-the-clock acute care clinic, and specialty services such as allergy, dermatology, orthopedics, and a travel clinic. Yale Health coordinates and provides payment for the services provided at the Yale Health Center, as well as for emergency treatment, off-site specialty services, inpatient hospital care, and other ancillary services. Yale Health's services are detailed in the *Yale Health Student Handbook*, available through the Yale Health Member Services Department, 203.432.0246, or online at <https://yalehealth.yale.edu/coverage/student-coverage>.

ELIGIBILITY FOR SERVICES

All full-time Yale degree-candidate students who are paying at least half tuition are enrolled automatically for Yale Health Basic Coverage. Yale Health Basic Coverage is offered at no charge and includes preventive health and medical services in the departments of Student Health, Gynecology, Student Wellness, and Mental Health & Counseling. In addition, treatment for urgent medical problems can be obtained twenty-four hours a day through Acute Care.

Students on leave of absence, on extended study and paying less than half tuition, or enrolled per course credit are not eligible for Yale Health Basic Coverage but may enroll in Yale Health Student Affiliate Coverage. Students enrolled in the Division of Special Registration as nondegree special students or visiting scholars are not eligible for Yale Health Basic Coverage but may enroll in the Yale Health Billed Associates Plan and pay a monthly fee. Associates must register for a minimum of one term within the first thirty days of affiliation with the University.

Students not eligible for Yale Health Basic Coverage may also use the services on a fee-for-service basis. Students who wish to be seen fee-for-service must register with the Member Services Department. Enrollment applications for the Yale Health Student Affiliate Coverage, Billed Associates Plan, or Fee-for-Service Program are available from the Member Services Department.

All students who purchase Yale Health Hospitalization/Specialty Coverage (see below) are welcome to use specialty and ancillary services at Yale Health Center. Upon referral, Yale Health will cover the cost of specialty and ancillary services for these students. Students with an alternate insurance plan should seek specialty services from a provider who accepts their alternate insurance.

HEALTH COVERAGE ENROLLMENT

The University also requires all students eligible for Yale Health Basic Coverage to have adequate hospital insurance coverage. Students may choose Yale Health Hospitalization/Specialty Coverage or elect to waive the plan if they have other hospitalization coverage, such as coverage through a spouse or parent. The waiver

must be renewed annually, and it is the student's responsibility to confirm receipt of the waiver by the University's deadlines noted below.

Yale Health Hospitalization/Specialty Coverage

For a detailed explanation of this plan, which includes coverage for prescriptions, see the *Yale Health Student Handbook*, available online at <https://yalehealth.yale.edu/coverage/student-coverage>.

Students are automatically enrolled and charged a fee each term on their Student Financial Services bill for Yale Health Hospitalization/Specialty Coverage. Students with no break in coverage who are enrolled during both the fall and spring terms are billed each term and are covered from August 1 through July 31. For students entering Yale for the first time, readmitted students, and students returning from a leave of absence who have not been covered during their leave, Yale Health Hospitalization/Specialty Coverage begins on the day the dormitories officially open. A student who is enrolled for the fall term only is covered for services through January 31; a student enrolled for the spring term only is covered for services through July 31.

Waiving Yale Health Hospitalization/Specialty Coverage Students are permitted to waive Yale Health Hospitalization/Specialty Coverage by completing an online waiver form at <https://yhpstudentwaiver.yale.edu> that demonstrates proof of alternate coverage. It is the student's responsibility to report any changes in alternate insurance coverage to the Member Services Department within thirty days. Students are encouraged to review their present coverage and compare its benefits to those available under Yale Health. The waiver form must be filed annually and must be received by September 15 for the full year or fall term or by January 31 for the spring term only.

Revoking the waiver Students who waive Yale Health Hospitalization/Specialty Coverage but later wish to be covered must complete and send a form voiding their waiver to the Member Services Department by September 15 for the full year or fall term, or by January 31 for the spring term only. Students who wish to revoke their waiver during the term may do so, provided they show proof of loss of the alternate insurance plan and enroll within thirty days of the loss of this coverage. Yale Health fees will not be prorated.

Yale Health Student Dependent Plans

A student may enroll the student's lawfully married spouse or civil union partner and/or legally dependent child(ren) under the age of twenty-six in one of three student dependent plans: Student + Spouse, Student + Child/Children, or Student Family Plan. These plans include services described in both Yale Health Basic Coverage and Yale Health Hospitalization/Specialty Coverage. Coverage is not automatic, and enrollment is by application. Applications are available from the Member Services Department or can be downloaded from the website (<https://yalehealth.yale.edu/resources/forms>) and must be renewed annually. Applications must be received by September 15 for full-year or fall-term coverage, or by January 31 for spring-term coverage only.

Yale Health Student Affiliate Coverage

Students on leave of absence, on extended study, or enrolled per course per credit; students paying less than half tuition; students enrolled in the EMBA program; students enrolled in the Broad Center MMS program; students enrolled in the PA Online program; and students enrolled in the EMPH program may enroll in Yale Health Student Affiliate Coverage, which includes services described in both Yale Health Basic and Yale Health Hospitalization/Specialty Coverage. Applications are available from the Member Services Department or can be downloaded from the website (<https://yalehealth.yale.edu/resources/forms>) and must be received by September 15 for full-year or fall-term coverage, or by January 31 for spring-term coverage only.

ELIGIBILITY CHANGES

Withdrawal A student who withdraws from the University during the first fifteen days of the term will be refunded the fee paid for Yale Health Hospitalization/Specialty Coverage. The student will not be eligible for any Yale Health benefits, and the student's Yale Health membership will be terminated retroactive to the beginning of the term. The medical record will be reviewed, and any services rendered and/or claims paid will be billed to the student on a fee-for-service basis. Assistance with identifying and locating alternative sources of medical care may be available from the Care Management Department at Yale Health. At all other times, a student who withdraws from the University will be covered by Yale Health for thirty days following the date of withdrawal. Fees will not be prorated or refunded. Students who withdraw are not eligible to enroll in Yale Health Student Affiliate Coverage. Regardless of enrollment in Yale Health Hospitalization/Specialty Coverage, students who withdraw will have access to services available under Yale Health Basic Coverage (including Student Health, Athletic Medicine, Mental Health & Counseling, and Care Management) during these thirty days to the extent necessary for a coordinated transition of care.

Leaves of absence Students who are granted a leave of absence are eligible to purchase Yale Health Student Affiliate Coverage for the term(s) of the leave. If the leave occurs on or *before* the first day of classes, Yale Health Hospitalization/Specialty Coverage will end retroactive to the start of the coverage period for the term. If the leave occurs anytime after the first day of classes, Yale Health Hospitalization/Specialty Coverage will end on the day the registrar is notified of the leave. In either case, students may enroll in Yale Health Student Affiliate Coverage. Students must enroll in Affiliate Coverage prior to the beginning of the term unless the registrar is notified after the first day of classes, in which case, the coverage must be purchased within thirty days of the date the registrar was notified. Fees paid for Yale Health Hospitalization/Specialty Coverage will be applied toward the cost of Affiliate Coverage. Coverage is not automatic, and enrollment forms are available at the Member Services Department or can be downloaded from the website (<https://yalehealth.yale.edu/resources/forms>). Fees will not be prorated or refunded.

Extended study or reduced tuition Students who are granted extended study status or pay less than half tuition are not eligible for Yale Health Hospitalization/Specialty Coverage. They may purchase Yale Health Student Affiliate Coverage during the term(s) of extended study. This plan includes services described in both Yale Health

Basic and Yale Health Hospitalization/Specialty Coverage. Coverage is not automatic, and enrollment forms are available at the Member Services Department or can be downloaded from the website (<https://yalehealth.yale.edu/resources/forms>). Students must complete an enrollment application for the plan prior to September 15 for the full year or fall term, or by January 31 for the spring term only.

Per course per credit Students who are enrolled per course per credit are not eligible for Yale Health Hospitalization/Specialty Coverage. They may purchase Yale Health Student Affiliate Coverage during the term(s) of per course per credit enrollment. This plan includes services described in both Yale Health Basic and Yale Health Hospitalization/Specialty Coverage. Coverage is not automatic, and enrollment forms are available at the Member Services Department or can be downloaded from the website (<https://yalehealth.yale.edu/resources/forms>). Students must complete an enrollment application for the plan prior to September 15 for the full year or fall term or by January 31 for the spring term only.

For a full description of the services and benefits provided by Yale Health, please refer to the *Yale Health Student Handbook*, available from the Member Services Department, 203.432.0246, 55 Lock Street, PO Box 208237, New Haven CT 06520-8237.

REQUIRED IMMUNIZATIONS

Proof of vaccination is a pre-entrance requirement determined by the Connecticut State Department of Public Health. Students who are not compliant with this state regulation will not be permitted to register for classes or move into the dormitories for the fall term, 2022. Please access the Incoming Student Vaccination Record form for graduate and professional students at <https://yalehealth.yale.edu/new-graduate-and-professional-student-forms>. Connecticut state regulation requires that this form be completed and signed, for each student, by a physician, nurse practitioner, or physician's assistant. The form must be completed, independent of any and all health insurance elections or coverage chosen. Once the form has been completed, the information must be entered into the Yale Vaccine Portal (available after June 20), and all supporting documents must be uploaded to <http://yale.medicatconnect.com>. The final deadline is July 15.

COVID-19 All students are required to provide proof of completed immunization against COVID-19 and obtain a booster shot within fourteen days of eligibility. Antibody titers or evidence of previous infection are not accepted as proof of immunity. Currently approved vaccines include Pfizer-BioNTech (two doses), Moderna (two doses), and Janssen/Johnson & Johnson (one dose). International vaccines that are authorized for emergency use by the World Health Organization will also be accepted by Yale as meeting the COVID-19 vaccination requirement. Yale Health's website will be updated as new vaccines are reviewed (<https://yalehealth.yale.edu/covid-19-vaccination-faq-international-students-and-scholars>). International students who do not have access to appropriately-timed WHO or FDA approved vaccination will be provided with free vaccination upon arrival on campus by special arrangement. Students who are not compliant with this vaccine requirement will not be permitted to register for classes or move into the dormitories for the fall term, 2022.

Influenza All students are required to have flu vaccination in the fall term when it is made available to them by Yale Health.

Measles, mumps, rubella, and varicella All students are required to provide proof of immunization against measles (rubeola), mumps, German measles (rubella), and varicella. Connecticut state regulation requires two doses of measles vaccine, two doses of mumps vaccine, two doses of rubella vaccine, and two doses of varicella vaccine. The first dose must have been given after the student's first birthday; the second dose must have been given at least twenty-eight (28) days after the first dose. If dates of vaccination are not available, titer results (blood test) demonstrating immunity may be substituted for proof of vaccination. The cost for all vaccinations and/or titers rests with the student, as these vaccinations are considered to be a pre-entrance requirement by the Connecticut State Department of Public Health. Students who are not compliant with this state regulation will not be permitted to register for classes or move into the dormitories for the fall term, 2022.

Quadrivalent meningitis All students living in on-campus dormitory facilities must be vaccinated against meningitis. The only vaccines that will be accepted in satisfaction of the meningitis vaccination requirement are ACWY Vax, Menveo, Nimenrix, Menactra, Mencevax, and Menomune. The vaccine must have been given within five years of the first day of classes at Yale. Students who are not compliant with this state regulation will not be permitted to register for classes or move into the dormitories for the fall term, 2022. The cost for all vaccinations and/or titers rests with the student, as these vaccinations are considered to be a pre-entrance requirement by the Connecticut State Department of Public Health. Please note that the State of Connecticut does not require this vaccine for students who intend to reside on campus and are over the age of twenty-nine.

TB screening The University requires tuberculosis screening for all incoming students who have lived or traveled outside of the United States within the past year.

Hepatitis B series The University recommends that incoming students receive a series of three Hepatitis B vaccinations. Students may consult their health care provider for further information.

Student Accessibility Services

Student Accessibility Services (SAS) engages in an interactive process with Yale students with disabilities, including graduate and professional school students, to determine reasonable and appropriate accommodations on a case-by-case, course-by-course basis. Students may initiate this process by requesting accommodations through the online registration form available at https://yale-accommodate.symplcity.com/public_accommodation.

Registration with SAS is kept private, and faculty/staff are notified of approved accommodations on a need-to-know basis only. Students should upload supporting documentation regarding their condition and request for accommodations through the online registration form. SAS's documentation guidelines are available at <https://sas.yale.edu/get-started/documentation-guidelines>.

SAS collaborates with students, faculty, and staff to coordinate approved academic and residential accommodations. SAS also works with students with sporadic and temporary disabilities as well. At any time during a term, students with a newly diagnosed disability or injury requiring accommodations should register with

SAS following the above instructions. More information can be found at <https://sas.yale.edu>. Contact SAS at sas@yale.edu or at 203.432.2324.

Resources on Sexual Misconduct

Yale University is committed to maintaining and strengthening an educational, working, and living environment founded on mutual respect. Sexual misconduct is antithetical to the standards and ideals of our community, and it is a violation of Yale policy and the disciplinary regulations of Yale College and the graduate and professional schools.

Sexual misconduct incorporates a range of behaviors including sexual assault, sexual harassment, intimate partner violence, stalking, voyeurism, and any other conduct of a sexual nature that is nonconsensual, or has the purpose or effect of threatening, intimidating, or coercing a person. Violations of Yale's Policy on Teacher-Student Consensual Relations also constitute sexual misconduct. Sexual activity requires affirmative consent, which is defined as positive, unambiguous, and voluntary agreement to engage in specific sexual activity throughout a sexual encounter.

Yale aims to eradicate sexual misconduct through education, training, clear policies, and serious consequences for violations of these policies. In addition to being subject to University disciplinary action, many forms of sexual misconduct are prohibited by Connecticut and federal law and may lead to civil liability or criminal prosecution. Yale provides a range of services and resources for victims of sexual misconduct. Information on options for reporting an incident, accommodations and other supportive measures, and policies and definitions may be found at <https://smr.yale.edu>.

SHARE: INFORMATION, ADVOCACY, AND SUPPORT

55 Lock Street, Lower Level

Appointments and drop-in hours: 9 a.m.–5 p.m., M–F

24/7 hotline: 203.432.2000

<https://sharecenter.yale.edu>

SHARE, the Sexual Harassment and Assault Response and Education Center, has trained counselors available 24/7 via direct hotline, as well as for drop-in hours on weekdays during regular business hours. SHARE is available to members of the Yale community who wish to discuss any past or current experience of sexual misconduct involving themselves or someone they care about. SHARE services are confidential and can be anonymous if desired. SHARE can provide professional help with medical and health issues (including accompanying individuals to the hospital or the police), as well as ongoing counseling and support. SHARE works closely with the University-Wide Committee on Sexual Misconduct, the Title IX coordinators, the Yale Police Department, and other campus resources and can provide assistance with initiating a formal or informal complaint.

If you wish to make use of SHARE's services, you can call the SHARE number (203.432.2000) at any time for a phone consultation or to set up an in-person appointment. You may also drop in on weekdays during regular business hours. Some legal and medical options are time-sensitive, so if you have experienced an assault, we encourage you to call SHARE and/or the Yale Police as soon as

possible. Counselors can talk with you over the telephone or meet you in person at Acute Care in the Yale Health Center or at the Yale New Haven Emergency Room. If it is not an acute situation and you would like to contact the SHARE staff during regular business hours, you can contact Jennifer Czincz, the director of SHARE (203.432.0310, jennifer.czincz@yale.edu), Anna Seidner (203.436.8217, anna.seidner@yale.edu), Cristy Cantú (203.432.2610, cristina.cantu@yale.edu), or Freda Grant (freda.grant@yale.edu).

TITLE IX COORDINATORS

203.432.6854

Office hours: 9 a.m.–5 p.m., M–F

<https://smr.yale.edu>

Title IX of the Education Amendments of 1972 protects people from sex discrimination in educational programs and activities at institutions that receive federal financial assistance. Sex discrimination includes sexual harassment, sexual assault, and other forms of sexual misconduct. The University is committed to providing an environment free from discrimination on the basis of sex or gender.

Yale College, the Graduate School of Arts and Sciences, and the professional schools have each designated a deputy Title IX coordinator, who works closely with the University Title IX Office and University Title IX Coordinator, Elizabeth Conklin. Coordinators respond to and address specific complaints, provide information on and coordinate with the available resources, track and monitor incidents to identify patterns or systemic issues, deliver prevention and educational programming, and address issues relating to gender-based discrimination and sexual misconduct within their respective schools. Coordinators are knowledgeable about, and will provide information on, all options for complaint resolution, and can initiate institutional action when necessary. Discussions with a Title IX coordinator are confidential. In the case of imminent threat to an individual or the community, the coordinator may need to consult with other administrators or take action in the interest of safety. The coordinators also work closely with the SHARE Center, the University-Wide Committee on Sexual Misconduct, and the Yale Police Department.

UNIVERSITY-WIDE COMMITTEE ON SEXUAL MISCONDUCT

203.432.4449

Office hours: 9 a.m.–5 p.m., M–F

<https://uwc.yale.edu>

The University-Wide Committee on Sexual Misconduct (UWC) is an internal disciplinary board for complaints of sexual misconduct available to students, faculty, and staff across the University, as described in the committee's procedures. The UWC provides an accessible, representative, and trained body to fairly and expeditiously address formal complaints of sexual misconduct. UWC members can answer inquiries about procedures and the University sexual misconduct policy. The UWC is comprised of faculty, senior administrators, and graduate and professional students drawn from throughout the University. UWC members are trained in the protocols for maintaining confidentiality and observe strict confidentiality with respect to all information they receive about a case.

YALE POLICE DEPARTMENT

101 Ashmun Street

24/7 hotline: 203.432.4400

<https://your.yale.edu/community/public-safety/yale-police-department>

The Yale Police Department (YPD) operates 24/7 and is comprised of highly trained, professional officers. The YPD can provide information on available victims' assistance services and also has the capacity to perform full criminal investigations. If you wish to speak with Sergeant Kristina Reech, the Sensitive Crimes & Support coordinator, she can be reached at 203.432.9547 during business hours or via email at kristina.reech@yale.edu. Informational sessions are available with the Sensitive Crimes & Support coordinator to discuss safety planning, available options, etc. The YPD works closely with the New Haven State's Attorney, the SHARE Center, the University's Title IX coordinators, and various other departments within the University. Talking to the YPD does not commit you to submitting evidence or pressing charges; with few exceptions, all decisions about how to proceed are up to you.

Office of International Students and Scholars

The Office of International Students and Scholars (OISS) coordinates services and support for Yale's nearly 6,000 international students, faculty, staff, and their dependents. OISS assists international students and scholars with issues related to employment, immigration, personal and cultural adjustment, and serves as a source of general information about living at Yale and in New Haven. As Yale University's representative for immigration concerns, OISS helps students and scholars obtain and maintain legal nonimmigrant status in the United States.

OISS programs, like daily English conversation groups, the Understanding America series, DEIB workshops, bus trips, and social events, provide an opportunity to meet members of Yale's international community and become acquainted with the many resources of Yale University and New Haven. Spouses and partners of Yale students and scholars will want to get involved with the International Spouses and Partners at Yale (ISPY) community, which organizes a variety of programs and events.

The OISS website (<http://oiss.yale.edu>) provides useful information to students and scholars prior to and upon arrival in New Haven, as well as throughout their stay at Yale. International students, scholars, and their families and partners can connect with OISS and the Yale international community virtually through Facebook.

OISS is a welcoming venue for students and scholars who want to check their email, grab a cup of coffee, and meet up with a friend or colleague. Open until 9 p.m. on weekdays during the academic year, the center—located at 421 Temple Street, across the street from Helen Hadley Hall—also provides meeting space for student groups and a venue for events organized by both student groups and University departments. For more information about reserving space at OISS, call 203.432.2305.

Libraries

Yale University Library comprises collections, spaces, technology, and people. The collections contain fifteen million print and electronic volumes in more than a dozen

libraries and locations, including Sterling Memorial Library, Beinecke Rare Book and Manuscript Library, and the Anne T. and Robert M. Bass Library. Yale Library's resources also include extensive licensed e-resources and extraordinary special collections that represent the diversity of the human experience in forms ranging from ancient papyri to early printed books, rare film and music recordings, and a growing body of born-digital materials. More than five hundred staff members facilitate teaching, research, and practice with deep subject-area knowledge as well as expertise in digital humanities, geographic information systems, and the use and management of research data. Yale Library's preservation and conservation specialists develop and apply leading-edge technology to maintain collections, providing critical support for increased access to collections, an expanding exhibition program, and Yale's emphasis on teaching with primary sources. For more information, visit <https://library.yale.edu>.

Religious Resources

The religious and spiritual resources of the University serve all students, faculty, and staff of all faiths. These resources are coordinated and/or supported through the Chaplaincy (located on the lower level of Bingham Hall on Old Campus); the University Church in Yale in Battell Chapel, an open and affirming ecumenical Christian congregation; and Yale Religious Ministries, the on-campus association of professionals representing numerous faith traditions. This association includes the Saint Thomas More Catholic Chapel and Center at Yale and the Joseph Slifka Center for Jewish Life at Yale, and it supports Buddhist, Hindu, and Muslim life professionals; several Protestant denominational and nondenominational ministries; and student religious groups such as the Baha'i Association, the Yale Hindu Student Council, the Muslim Student Association, the Sikh Student Association, and many others. Hours for the Chaplain's Office during the academic term are Monday through Thursday from 8:30 a.m. to 11 p.m., Friday from 8:30 a.m. to 5 p.m., and Sunday evenings from 5 to 11. Additional information is available at <http://chaplain.yale.edu>.

Graduate-Professional Student Senate (GPSS)

The Graduate and Professional Student Senate (GPSS) is composed of student-elected representatives from each of the fourteen graduate and professional schools at Yale. Any student enrolled in these schools is eligible to run for a senate seat during fall elections. As a governing body, the GPSS advocates for student concerns and advancement within Yale, represents all graduate and professional students to the outside world, and facilitates interaction and collaboration among the schools through social gatherings, academic and professional events, and community service. GPSS meetings occur on alternating Thursdays and are open to the entire graduate and professional school community, as well as representatives from the Yale administration. GPSS also oversees the management of the Gryphon, a graduate and professional student center, located at 204 York Street. The center provides office and event space for GPSS and other student organization activities, funds student groups, and houses Gryphon's Pub, open nightly. For more information, please visit <https://gpsenate.yale.edu>.

Cultural and Recreational Opportunities

CULTURAL OPPORTUNITIES

Keep up to date about campus news and events by subscribing to the Yale Today and/or Yale Best of the Week e-newsletters (<https://news.yale.edu/subscribe-enewsletter>), which feature stories, videos, and photos from YaleNews (<http://news.yale.edu>) and other campus websites. Also visit the Yale Calendar of Events (<http://calendar.yale.edu>) and the University's Facebook, Twitter, Instagram, LinkedIn, and YouTube channels.

The Yale Peabody Museum of Natural History, founded in 1866, houses more than fourteen million specimens and objects in ten curatorial divisions: Anthropology, Botany, Entomology, History of Science and Technology, Invertebrate Paleontology, Invertebrate Zoology, Mineralogy and Meteoritics, Paleobotany, Vertebrate Paleontology, and Vertebrate Zoology. The renowned collections continue to enrich teaching and learning and to inform groundbreaking new research. The museum's galleries are currently under renovation and will reopen in 2024 to display thousands of objects, including the first *Brontosaurus*, *Stegosaurus*, and *Triceratops* specimens ever discovered.

The Yale University Art Gallery was founded in 1832 as an art museum for Yale and the community. Today it is one of the largest museums in the country, holding nearly 300,000 objects and welcoming visitors from around the world. The museum's encyclopedic collection can engage every interest. Galleries showcase artworks from ancient times to the present, including vessels from Tang-dynasty China, early Italian paintings, textiles from Borneo, treasures of American art, masks from Western Africa, modern and contemporary art, ancient sculptures, masterworks by Degas, van Gogh, and Picasso, and more. Spanning one and a half city blocks, the museum features more than 4,000 works on display, multiple classrooms, a rooftop terrace, a sculpture garden, and dramatic views of New Haven and the Yale campus. The gallery's mission is to encourage an understanding of art and its role in society through direct engagement with original works of art. Programs include exhibition tours, lectures, and performances, all free and open to the public. For more information, please visit <https://artgallery.yale.edu>.

The Yale Center for British Art is a museum that houses the largest collection of British art outside the United Kingdom, encompassing works in a range of media from the fifteenth century to the present. It offers a vibrant program of exhibitions and events both in person and online. Opened to the public in 1977, the YCBA's core collection and landmark building—designed by architect Louis I. Kahn—were a gift to Yale University from the collector and philanthropist Paul Mellon, '29. For more information, please visit <https://britishart.yale.edu>.

There are more than eighty endowed lecture series held at Yale each year on subjects ranging from anatomy to theology, and including virtually all disciplines.

More than five hundred musical events take place at the University during the academic year. In addition to degree recitals by graduate students, the School of Music presents the Ellington Jazz Series, Faculty Artist Series, Horowitz Piano Series, New Music New Haven, Onepo Chamber Music Series, and Yale in New York, as well as performances by the Yale Opera, Yale Philharmonia, Yale Choral Artists, and various YSM ensembles,

along with concerts at the Morris Steinert Collection of Musical Instruments. The Institute of Sacred Music presents Great Organ Music at Yale, the Yale Camerata, the Yale Schola Cantorum, and many other special events. The Norfolk Chamber Music Festival/Yale Summer School of Music presents a six-week Chamber Music Session, along with the New Music Workshop and the Chamber Choir and Choral Conducting Workshop. Many of these concerts stream live on the School's website (<https://music.yale.edu>). Undergraduate organizations include the Yale Bands, Yale Glee Club, Yale Symphony Orchestra, and numerous other singing and instrumental groups. The Department of Music sponsors the Yale Collegium, Yale Baroque Opera Project, productions of new music and opera, and undergraduate recitals.

For theatergoers, Yale and New Haven offer a wide range of dramatic productions at such venues as the University Theatre, Yale Repertory Theatre, Yale Cabaret, Yale Residential College Theaters, Off Broadway Theater, Iseman Theater, Whitney Humanities Center, Collective Consciousness Theatre, A Broken Umbrella Theatre, Elm Shakespeare Company, International Festival of Arts and Ideas, Long Wharf Theatre, and Shubert Performing Arts Center.

RECREATIONAL OPPORTUNITIES

The Payne Whitney Gymnasium is one of the most elaborate and extensive indoor athletic facilities in the world. This complex includes the 3,100-seat John J. Lee Amphitheater, the site for varsity basketball, volleyball, and gymnastics competitions; the Robert J.H. Kiphuth Exhibition Pool; the Brady Squash Center, a world-class facility with fifteen international-style courts; the Adrian C. Israel Fitness Center, a state-of-the-art exercise and weight-training complex; the Brooks-Dwyer Varsity Strength and Conditioning Center; the Colonel William K. Lanman, Jr. Center, a 30,000-square-foot space for recreational/intramural play and varsity team practice; the Greenberg Brothers Track, an eighth-mile indoor jogging track; the David Paterson Golf Technology Center; and other rooms devoted to fencing, gymnastics, rowing, wrestling, martial arts, general exercise, and dance. Numerous group exercise classes in dance, martial arts, zumba, yoga, pilates, spinning, HIIT and cardio, and sport skills are offered throughout the year. Yale undergraduates and graduate and professional school students may use the gym at no charge throughout the year. Memberships at reasonable fees are available for faculty, employees, postdocs, visiting associates, alumni, and members of the New Haven community. Memberships are also available for spouses and children of all members. Additional information is available at <https://sportsandrecreation.yale.edu>.

During the year, various recreational opportunities are available at the David S. Ingalls Rink, the McNay Family Sailing Center in Branford, the Yale Outdoor Education Center (OEC) in East Lyme, the Yale Tennis Complex, and the Yale Golf Course. All members of the Yale community and their guests may participate at each of these venues for a modest fee. Up-to-date information on programs, hours, and specific costs is available at <https://sportsandrecreation.yale.edu>.

Approximately fifty club sports are offered at Yale, organized by the Office of Club Sports and Outdoor Education. Most of the teams are for undergraduates, but a few are available to graduate and professional school students. Yale students, faculty, staff, and alumni may use the OEC, which consists of 1,500 acres surrounding a mile-long lake in East Lyme, Connecticut. The facility includes overnight cabins and campsites,

a pavilion and dining hall available for group rental, and a waterfront area with supervised swimming, rowboats, canoes, stand-up paddleboards, and kayaks. Adjacent to the lake, a shaded picnic grove and gazebo are available to visitors. In a more remote area of the facility, hiking trails loop the north end of the property; trail maps and directions are available on-site at the field office. The OEC is open from the third week in June through Labor Day. For more information, including mid-September weekend availability, call 203.432.2492 or visit <https://sportsandrecreation.yale.edu>.

Throughout the year, Yale graduate and professional school students have the opportunity to participate in numerous intramural sports activities, including volleyball, soccer, and softball in the fall; basketball and volleyball in the winter; softball, soccer, ultimate, and volleyball in the spring; and softball in the summer. With few exceptions, all academic-year graduate-professional student sports activities are scheduled on weekends, and most sports activities are open to competitive, recreational, and coeducational teams. More information is available from the Intramurals Office in Payne Whitney Gymnasium, 203.432.2487, or online at <https://sportsandrecreation.yale.edu>.

CITY AND COUNTRYSIDE

Only a short bike ride away from the center of New Haven lies the countryside of a state that is over one-half forest land. Farms, parks, lakes, trails, beaches, and nature preserves all await students seeking to spend a few hours away from their studies.

The most spectacular local features are the region's traprock ridges, the largest being East Rock, West Rock, and the Sleeping Giant. All three of these have been preserved as parks. East Rock and West Rock actually extend into New Haven, and their rusty-orange cliffs form a dramatic backdrop for the city. Sleeping Giant lies a pleasant ninety-minute bicycle ride from town.

New Haven is also surrounded by water supply forests. For a small annual fee, the Water Authority's twenty thousand acres of woods, traprock ridges, lakes, and streams are open for hiking, cross-country skiing, and fishing.

Tucked away in pockets off the main corridors of development lie some of the country's most fertile farmland. The Central Valley of New England, in which New Haven is situated, was once famous for its tobacco, onions, potatoes, apples, and seed growers. The remaining acres are now mostly in dairy farms and pick-your-own orchards, providing the region with rural scenery and fresh produce.

Farther out from the city, the land gets progressively hillier and less inhabited. The most dramatic region of the state is the Northwest Highlands of Litchfield County, where the School maintains its Great Mountain Forest Camp. Just a two-hour drive from New Haven, the Northwest Highlands boast the Appalachian Trail, New England's largest caves, a portion of the Taconic Mountains, and the vibrant fall colors of the Litchfield Hills.

But there is no need to travel so far to experience nature's bounty. New Haven itself is fortunate to have five major parks, including Edgewood Park, designed by Frederick Law Olmsted, Jr. Seventeen percent of New Haven is parkland, a figure that few cities in the world can match.

With so much nature near at hand and foot, New Haven comes close to maintaining the elusive ideal balance of the convenience and culture of the city with the pleasures of the countryside.

ENROLLMENT

MASTER'S DEGREES CONFERRED, 2022

MASTER OF ENVIRONMENTAL MANAGEMENT

Forest Abbott-Lum
Marco Alvarez
Lauren Ashbrook
Ines Ayostina
Katherine Ball
Jessica Bediako
Shannon Bell
Aditi Bhatkhande
Jake Billhorn
Marisa Bruno
Simon Bunyan
Mariana Camacho Fernandez
Kevin Cellucci
Suman Chandra
Lani Chang
I-Hsin Cheng
Zhiheng Chi
Ryan Clemens
Tyler Clevenger
Lily Colburn
Gillian Cowley
Sawyer Cresap
Erin Davies
Alexander De Jesus
Xuan Du
Rebecca Dube
Caroline Ebinger
Katie Ebinger
Epongue Ekille
Vania Farid
Danielle Flanagan
Ryanna Fossum
Paul Freudenburg
Laura González Mantecón
Charlie Governali
Claire Goydan
Victoria Gramuglia
Marissa Grenon
Ian Grosfelt
Cally Guasti-O'Donoghue
Elise Guinee Cooper
Liam Gunn

Yuqin Han
Charles Harper
Isabel Harrison
Carrie Heilbrun
Grace Hilbert
Elizabeth Himschoot
John Hite
Sam Horowitz
Tim Ibbotson-Sindelar
Sophie Janeway
Emily Judson
Pari Kasotia
Trinidad Kechkian
Meghana Kharod
Veenu King
Sam Konstantinov
Akshyah Krishnakumar
Komal Kunwar
Elaine Lac
Jamie Ying Feng Lee
Danyan Leng
Noah Lerner
Yang Li
Elwin Lim
Tara Litjens
Qingyang Liu
Allegra Lovejoy
Grace Lowe
Maggie Lund
Julian Macrone
Matt Mahoney
Emily Mangan
Victoria Mansfield
Charlie Markowitz
Emily McInerney
Kate Meyer
Shoshana Micon
Noah Mitchell-Ward
George Moore
Labibah Naveed
Emile Newman
Claudia Ochoa Perez
Emmie Oliver
Rachel Siew Hui Ooi
Desmond Owuoth
Eric Pan
Alix Pauchet
Taina Perez

Siya Piparsania
Liz Plascencia
Bryce Powell
Miles Radin
Cameron Ramey
Allie Rand
Lovinia Reynolds
Emily Richardson
Kristina Rodriguez
Talia Rubnitz
Jackie Ruggiero
Jack Rusk
Lauren Sadowski
Abdeali Saherwala
Carolina Salazar
Gillian Sawyer
Jack Schleifer
Max Schreck
Maximilian Schubert
Yvonne Shih
Avery Siler
Aprajita Singh
Tanya Sinha
Raghav Srivastava
Elizabeth Stagg
Ben Stern
Margaret Stover
Claire Swingle
Katherine Tucker
Jhena Vigrass
Soraya Walli
Sonia Wang
Zilin Wang
Abigail Warner
Shelby Warrington
Darya Watnick
Winter Wilson
Ari Winer
Alexandra Wisner
Kristen Wraithwall
Longyi Xiang
Nenha Young
Anna Yu
Michelle Zackin
Mingjia Zhong
Anelise Zimmer
Alexander Zorn

MASTER OF ENVIRONMENTAL SCIENCE

Vivian Bi
Sarah Bonello
Jacqueline Buonfiglio
Quint Doan
Ryan Dougherty
Logan Emler
Lloyd Farley
Ben Girgenti
Stan Gosliner
Luca Guadagno
Melissa Halstead
Nora Hardy
Aarthi Kannan
Rosie Li
Alexandra Morrison
Tobias Muellers
Jonathan Rigby
Rachael Ross
Kieren Rudge
Carolyn Savoldelli
Arunima Sircar
Stella Stepanyan
Uthara Vengrai
Andrew Vogt
Liang Zheng
Rixin Zhu

MASTER OF FOREST SCIENCE

William Weinberg
Yihong Zhu

MASTER OF FORESTRY

Hannah Andrew
Walker Cammack
Chris DeFiore
Musa Joko
Kyle Lemle
Eudora Miao
Eliot Nagele
Genevieve Tarino
Brad Ward

PH.D. DEGREES CONFERRED, DECEMBER 2021

Katherine Burrows
Tirthankar Chakraborty
Danica Anne Doroski
Ana Clara Fanton Borges
Stephanie Margalit Weber

PH.D. DEGREES CONFERRED, MAY 2022

Andis Arietta
Christopher Beltz
Daniel Kane
Kyra Prats
Mario Soriano Jr.
Lisa Christina Weber

STUDENTS WORKING TOWARD MASTER'S DEGREES**MASTER OF ENVIRONMENTAL MANAGEMENT**

Nisreen Abo-Sido
Ayush Acharya
Jennifer Adachi
Chiara Agnello
Jillian Aicher
Dan Alberga
Ananya Ananya Singh
Ryan Anderson
Zane Anthony
Sidney Axtell
Rong Bao
Cristina Barrera
Allyson Beach
Charlotte Benishek
Yiqing Cai
Isobel Campbell
Molly Charles
Steven Clarke
Jesse Cohen
DeNeile Cooper
Joshua De-Anda
Nadeem Demian
Kelly Emery
Ismini Ethridge
Sam Feibel
Ashley Felix
Nishara Fernando
Colleen Flynn
Charly Frisk
Audra Gale
Adrian Garaycochea Mendoza del Solar
Cicy Geng
Sarah Gledhill
Marcella Hager
Ji-Won Ham
Robin Happel
Alex Healey
Phoebe Hering

Chase Howell
Lydia Jackson
Maria Jiang
Sofia John
Molly Johnson
Clair Dasowl Jung
Coral Keegan
Michaela Kerxhalli-Kleinfield
Wyatt Klipa
Christina Kohler
Cameron Kritikos
Sumitra Kumar
Helena Lam
Gabe LePage
Minnie Min Ying Li
Yulan Lu
Mary Marshall
Ross Martin
Kelly McGlinchey
Isaac Merson
Harrison Meyer
Annie Miller
Joe Miller
Jinali Mody
Daniel Monteagudo
Sophie Morin
Eileen Nakahata
Veronica Nicholson
Nick Nugent
Justine Phillips-Gallucci
Shannon Pressler
Sophia Ptacek
Ub Qiu
Kiera Quigley
Kyle Richmond-Crosset
Elisse Roche
Gabriela Rodriguez
Molly Ryan
Carolina Sanchez
Raffaele Sindoni Saposhnik
Arielle Schacter
Jun Shi
Tabitha Sookdeo
Zack Steigerwald Schnall
Yu Suzuki
Julia Sweatman
Julia Talamo
Golden Tayebwa

Maggie Thompson
Carlos Velazquez
Thibault Vermeulen
Mark Voll
Jikai Wang
Shuya Wang
Max Wasser
Lauren Wiggins
Eleah Wilkerson
Kirsten Williams
Te'Yah Wright
Qijin Wu
Angela Xue
Steve Yannacone
Jamie Yates
Emma Zehner

MASTER OF ENVIRONMENTAL SCIENCE

Frannie Adams
Robert Anderson
Jeffrey Blay
Sarah Brown
Francis Commercon
Cloe Dickson
Matthew Duyst
Anna Feldman
Dylan Feldmeier
Daivie Ghosh
Emma Grover
Amalta Gupta
Vivian Hawkinson
Delaney Heileman
Zachary Herring
Necti Jain
Seung Min Kim
Tessa Lee
Storm Lewis
Janey Lienau
Leilani Danning Lu
Mara MacDonell
Urmila Mallick
Tyler Mar
Katie Michels
Sydney Nelson
Senna Ohlsson
Jessie Peterman
Miriam Remshard
Rob Rioux
Brandon Sanchez

Liana Smale
Gabe Snashall
Tyler Stotland
Destiny Treloar
Jayson Velazquez
Jessie Wainer
Alisa White
Weixi Wu
Cate York

MASTER OF FOREST SCIENCE

Leah Andino
Cecilia Rogers

MASTER OF FORESTRY

Fredrick Addai
Shaylyn Austin
Grace Bachmann
Emma Broderick
Thoko Changufu
Mary Katherine DeWane
Michael Freiburger
Joshua Friedlein
Jess Jones
Chomri Khayi
Sean Mahoney
Cameron McKenzie
Lauryn Sherman
Ryan Smith
Aaron Troncoso
Raqib Valli

STUDENTS WORKING TOWARD PH.D. DEGREE

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Nadia Batool Ahmad
Yara Abdulrahman Alshwairikh
Kristy Marie Barnes Ferraro
Aishwarya Bhandari
Logan Billet
Amma Asantewaa Agyei Boakye
Aleca Borsuk
Samara Meade Brock
Sarah Louise Brown
Jesse Bryant
Mary Burak
Paul Burow
Scott Matthew Carpenter
Damaris Avery Chenoweth
Hayon Michelle Choi

Arun Vinod Dayanandan
Logan Mace Emlet
Alicia Renee Entem
Christian Espinosa Schatz
Manuel Romeo Flores III
Yufang Gao
Jonathan Gewirtzman
Edgardo Gonzalez
Matthew David Gordon
Thomas Harris
Chris Hebdon
Momoko Ishii
Lav Kanoi
Koichi Steven Kanaoka
Jocelyn La Fleur
Simon Fridtjof Lang
Manon Lefèvre
Jinge Li
Laura Logozzo
Kathryn Ann McConnell
Katherine Adelle Meier
Julia Monk
Lauren Anne Oliver
Katherine Downey (Kaggie) Orrick
Jacob Donald James Peters
Alexander Polussa
Meredith Reba
Karam Sheban
Helen Siegel
Rohan Daniel Simkin
Evan Singer
Audrey Margarita Smith
Nathalie Sommer
Rory Stewart
Megan Sullivan
Akshay Surendra
Samantha Michelle Tracy
Shou En (Samuel) Tsao
Harikrishnan Venugopalan Nair Radhamoni
Uthara Vengrai
Andrew Johnathan Vogt
Elisabeth Ballard (Eli) Ward
Katy Mary Wilson
David J. Woodbury
Shoko Yamada
Yichen Yang
Joseph Zailaa
Keer Zhang

Yong Zhao
Wen Zhou
Laura Zwicker

THE WORK OF YALE UNIVERSITY

The work of Yale University is carried on in the following schools:

Yale College Est. 1701. Courses in humanities, social sciences, natural sciences, mathematical and computer sciences, and engineering. Bachelor of Arts (B.A.), Bachelor of Science (B.S.).

For additional information, please visit <https://admissions.yale.edu>, email student.questions@yale.edu, or call 203.432.9300. Postal correspondence should be directed to Office of Undergraduate Admissions, Yale University, PO Box 208234, New Haven CT 06520-8234.

Graduate School of Arts and Sciences Est. 1847. Courses for college graduates. Master of Arts (M.A.), Master of Science (M.S.), Master of Philosophy (M.Phil.), Doctor of Philosophy (Ph.D.).

For additional information, please visit <https://gsas.yale.edu>, email graduate.admissions@yale.edu, or call the Office of Graduate Admissions at 203.432.2771. Postal correspondence should be directed to Office of Graduate Admissions, Yale Graduate School of Arts and Sciences, PO Box 208236, New Haven CT 06520-8236.

School of Medicine Est. 1810. Courses for college graduates and students who have completed requisite training in approved institutions. Doctor of Medicine (M.D.). Postgraduate study in the basic sciences and clinical subjects. Five-year combined program leading to Doctor of Medicine and Master of Health Science (M.D./M.H.S.). Combined program with the Graduate School of Arts and Sciences leading to Doctor of Medicine and Doctor of Philosophy (M.D./Ph.D.). Master of Medical Science (M.M.Sc.) from the Physician Associate Program and the Physician Assistant Online Program.

For additional information, please visit <https://medicine.yale.edu/edu>, email medical.admissions@yale.edu, or call the Office of Admissions at 203.785.2643. Postal correspondence should be directed to Office of Admissions, Yale School of Medicine, 367 Cedar Street, New Haven CT 06510.

Divinity School Est. 1822. Courses for college graduates. Master of Divinity (M.Div.), Master of Arts in Religion (M.A.R.). Individuals with an M.Div. degree may apply for the program leading to the degree of Master of Sacred Theology (S.T.M.).

For additional information, please visit <https://divinity.yale.edu>, email div.admissions@yale.edu, or call the Admissions Office at 203.432.5360. Postal correspondence should be directed to Admissions Office, Yale Divinity School, 409 Prospect Street, New Haven CT 06511.

Law School Est. 1824. Courses for college graduates. Juris Doctor (J.D.). For additional information, please visit <https://law.yale.edu>, email admissions.law@yale.edu, or call the Admissions Office at 203.432.4995. Postal correspondence should be directed to Admissions Office, Yale Law School, PO Box 208215, New Haven CT 06520-8215.

Graduate Programs: Master of Laws (LL.M.), Doctor of the Science of Law (J.S.D.), Master of Studies in Law (M.S.L.). Doctor of Philosophy (Ph.D.) awarded by the Graduate School of Arts and Sciences. For additional information, please visit <https://law.yale.edu>, email gradpro.law@yale.edu, or call the Graduate Programs Office at 203.432.1696. Postal correspondence should be directed to Graduate Programs, Yale Law School, PO Box 208215, New Haven CT 06520-8215.

School of Engineering & Applied Science Est. 1852. Courses for college graduates. Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) awarded by the Graduate School of Arts and Sciences.

For additional information, please visit <https://seas.yale.edu>, email grad.engineering@yale.edu, or call 203.432.4252. Postal correspondence should be directed to Office of Graduate Studies, Yale School of Engineering & Applied Science, PO Box 208292, New Haven CT 06520-8292.

School of Art Est. 1869. Professional courses for college and art school graduates. Master of Fine Arts (M.F.A.).

For additional information, please visit <http://art.yale.edu>, email artschool.info@yale.edu, or call the Office of Academic Administration at 203.432.2600. Postal correspondence should be directed to Office of Academic Administration, Yale School of Art, PO Box 208339, New Haven CT 06520-8339.

School of Music Est. 1894. Graduate professional studies in performance and composition. Certificate in Performance (CERT), Master of Music (M.M.), Master of Musical Arts (M.M.A.), Artist Diploma (A.D.), Doctor of Musical Arts (D.M.A.).

For additional information, please visit <https://music.yale.edu>, email gradmusic.admissions@yale.edu, or call the Office of Admissions at 203.432.4155. Postal correspondence should be directed to Yale School of Music, PO Box 208246, New Haven CT 06520-8246.

School of the Environment Est. 1900. Courses for college graduates. Master of Forestry (M.F.), Master of Forest Science (M.F.S.), Master of Environmental Science (M.E.Sc.), Master of Environmental Management (M.E.M.). Doctor of Philosophy (Ph.D.) awarded by the Graduate School of Arts and Sciences.

For additional information, please visit <https://environment.yale.edu>, email admissions.yse@yale.edu, or call the Office of Admissions at 800.825.0330. Postal correspondence should be directed to Office of Admissions, Yale School of the Environment, 300 Prospect Street, New Haven CT 06511.

School of Public Health Est. 1915. Courses for college graduates. Master of Public Health (M.P.H.). Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) awarded by the Graduate School of Arts and Sciences.

For additional information, please visit <https://publichealth.yale.edu>, email ysph.admissions@yale.edu, or call the Admissions Office at 203.785.2844.

School of Architecture Est. 1916. Courses for college graduates. Professional and post-professional degree: Master of Architecture (M.Arch.); nonprofessional degree: Master

of Environmental Design (M.E.D.). Doctor of Philosophy (Ph.D.) awarded by the Graduate School of Arts and Sciences.

For additional information, please visit <https://www.architecture.yale.edu>, email gradarch.admissions@yale.edu, or call 203.432.2296. Postal correspondence should be directed to the Yale School of Architecture, PO Box 208242, New Haven CT 06520-8242.

School of Nursing Est. 1923. Courses for college graduates. Master of Science in Nursing (M.S.N.), Post Master's Certificate (P.M.C.), Doctor of Nursing Practice (D.N.P.). Doctor of Philosophy (Ph.D.) awarded by the Graduate School of Arts and Sciences.

For additional information, please visit <https://nursing.yale.edu> or call 203.785.2389. Postal correspondence should be directed to Yale School of Nursing, Yale University West Campus, PO Box 27399, West Haven CT 06516-0972.

David Geffen School of Drama Est. 1925. Courses for college graduates and certificate students. Master of Fine Arts (M.F.A.), Certificate in Drama, Doctor of Fine Arts (D.F.A.).

For additional information, please visit <https://drama.yale.edu>, email dgsd.admissions@yale.edu, or call the Registrar/Admissions Office at 203.432.1507. Postal correspondence should be directed to David Geffen School of Drama at Yale University, PO Box 208325, New Haven CT 06520-8325.

School of Management Est. 1976. Courses for college graduates. Master of Business Administration (M.B.A.), Master of Advanced Management (M.A.M.), Master of Management Studies (M.M.S.). Doctor of Philosophy (Ph.D.) awarded by the Graduate School of Arts and Sciences.

For additional information, please visit <https://som.yale.edu>. Postal correspondence should be directed to Yale School of Management, PO Box 208200, New Haven CT 06520-8200.

Jackson School of Global Affairs Est. 2022. Courses for college graduates. Master in Public Policy (M.P.P.) and Master of Advanced Study (M.A.S.).

For additional information, please visit <https://jackson.yale.edu>, email jackson.admissions@yale.edu, or call 203.432.6253.

M.E.SC./M.F.S. THESIS RESEARCH NUMBERS

Faculty	ENV Thesis Research Number
Anisfeld, Shimon	3010
Ashton, Mark	3020
Bell, Michelle	3035
Benoit, Gaboury	3040
Bradford, Mark	3054
Brodersen, Craig	3072
Burke, Ingrid	3073
Carpenter, Carol	3110
Chertow, Marian	3130
Clark, Susan	3140
Comita, Liza	3143
Doolittle, Amity	3158
Dove, Michael	3160
Duguid, Marlyse	3175
Esty, Daniel	3180
Farrell, Justin	3185
Fenichel, Eli	3195
Gillingham, Kenneth	3215
Gregoire, Timothy	3240
Harris, Nyeema	3246
Kotchen, Matthew	3257
Lauenroth, William	3261
Lee, Xuhui	3260
Leiserowitz, Anthony	3263
Marlon, Jennifer	3300
Mendelsohn, Robert	3320
Orefice, Joseph	3345
Queenborough, Simon	3350
Rao, Narasimha	3363
Raymond, Peter	3364
Saiers, James	3390
Sanford, Luke	3393
Schmitz, Oswald	3400
Seto, Karen	3408
Skelly, David	3420
Taylor, Dorceta	3450

Torres, Gerald	3462
Vedder, Amy	3469
Wargo, John	3470
Yao, Yuan	3488
Zimmerman, Julie	3500

PROJECT COURSES

Faculty	ENV Project Course Number
Anastas, Paul	1008
Anisfeld, Shimon	1010
Ashton, Mark	1020
Bacher, Jessica	1030
Bell, Michelle	1035
Benoit, Gaboury	1040
Berlyn, Graeme	1050
Boyd, Peter	1052
Bradford, Mark	1054
Brodersen, Craig	1072
Carpenter, Carol	1110
Chertow, Marian	1130
Clark, Susan	1140
Comita, Liza	1143
Cort, Todd	1147
DeCew, Stuart	1153
Decker, Mary Beth	1155
Doolittle, Amity	1158
Dove, Michael	1160
Duguid, Marlyse	1175
Esty, Daniel	1180
Farrell, Justin	1185
Fenichel, Eli	1195
Gentry, Bradford	1210
Gillingham, Kenneth	1215
Gregoire, Timothy	1240
Gross, Daniel	1243
Harris, Nyeema	1246
Klinkenborg, Verlyn	1256
Kotchen, Matthew	1257
Kysar, Douglas	1259
Lauenroth, William	1261
Lee, Xuhui	1260
Leiserowitz, Anthony	1263
Lifset, Reid	1270
Marlon, Jennifer	1300
Mendelsohn, Robert	1320

Michelangeli, Fabian	1325
Montagnini, Florencia	1330
Murphy-Dunning, Colleen	1335
Narasimha, Rao	1363
Orefice, Joseph	1345
Queenborough, Simon	1350
Raymond, Peter	1364
Reuning-Scherer, Jonathan	1380
Reynolds, Kristin	1368
Saiers, James	1390
Sanford, Luke	3393
Schmitz, Oswald	1400
Schwarz, Andrew	1402
Seto, Karen	1408
Skelly, David	1420
Smiley Smith, Sara	1427
Smith, Ronald	1430
Taylor, Dorceta	1450
Tomlin, Dana	1460
Torres, Gerald	1462
Vandebroek, Ina	1467
Vedder, Amy	1469
Wargo, John	1470
Weber, Albert William	1473
Wood, Stephen	1475
Yao, Yuan	1488
Zimmerman, Julie	1500

YALE UNIVERSITY CAMPUS SOUTH & YALE MEDICAL CENTER



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