



ER Credit 9: Sustainability Learning Outcomes

Total Stanford Graduates, 2010-2011: 4924

Graduates with Degrees from Programs with Sustainability Learning Outcomes: 2470

Degree Programs with Sustainability Learning Outcomes:

Department: [Aeronautics and Astronautics](#)

Undergraduate Degrees Awarded: 0

Graduate Degrees Awarded: 60

Sustainability Learning Outcome:

Despite short-term fluctuations, the most conservative projections of long-term growth for commercial aviation indicate that, without significant technological advances, the environmental impact of aviation will begin to grow again after decades of continuous reductions....Enabling growth with decreased environmental impact will require innovative ideas in a variety of areas....The Aeronautics and Astronautics Department is well situated to tackle many of these challenges. Through the combined efforts of the Aerospace Design Lab, the Aircraft Aerodynamics and Design Group, the GPS Lab, and the Unsteady Flow Physics and Aeroacoustics Laboratory, and collaborations with other departments, the Aero/Astro Department is tackling many of the key enabling technologies and ideas to make a sustainable commercial aviation system a reality.

Department: [Anthropology](#)

Undergraduate Degrees Awarded: 23

Graduate Degrees Awarded: 24

Sustainability Learning Outcome:

Anthropology is devoted to the study of human beings and human societies as they exist across time and space. It is distinct from other social sciences in that it gives central attention to the full time span of human history, and to the full range of human societies and cultures, including those located in historically marginalized parts of the world. It is therefore especially attuned to questions of social, cultural, and biological diversity, to issues of power, identity, and inequality, and to understanding the dynamic processes of social, historical, ecological, and biological change over time. Education in Anthropology provides excellent preparation for living in a multicultural and globally-interconnected world, and helps to equip students for careers in fields including law, medicine, business, public service, research, ecological sustainability, and resource management.

Department: [Bioengineering](#)

Undergraduate Degrees Awarded: 0

Graduate Degrees Awarded: 34

Sustainability Learning Outcome:

Bioengineers are focused on advancing human health and promoting environmental sustainability, two of the greatest challenges for our world. Understanding complex living systems is at the heart of meeting these challenges. The mission of Stanford's Department of Bioengineering is to create a fusion of engineering and the life sciences that promotes scientific discovery and the development of new biomedical technologies and therapies through research and education.

Department: [Biology](#)

Undergraduate Degrees Awarded: 124

Graduate Degrees Awarded: 50

Sustainability Learning Outcome:

Faculty in the area of population biology are interested in a broad range of conceptual and empirical issues - from population ecology, ecosystems ecology, the biochemistry/biophysics and physiology of adaptations and evolutionary genetics, floristic and systematic botany to systematic zoology. Research groups work with a diversity of plants, birds, insect, lizards, and marine invertebrates....The research in this area has not only enriched our basic understanding of living systems, it has also provided insights relevant to a variety of problems of great practical importance, including strategies for the control of insect pests, the design of nature reserves and the prevention of species extinctions and habitat destruction....Research in population, behavioral and ecosystem ecology benefits from proximity of the 1,300 acre Jasper Ridge Biological Preserve - the largest and most biologically diverse preserve on any American university campus. It is located five miles from the Herrin/Gilbert laboratories.

Department: [Chemical Engineering](#)

Undergraduate Degrees Awarded: 23

Graduate Degrees Awarded: 38

Sustainability Learning Outcome:

The large number of industries which depend on the synthesis and processing of chemicals and materials place the chemical engineer in great demand.; In addition to traditional examples such as the chemical, energy and oil industries, opportunities in biotechnology, pharmaceuticals, electronic device fabrication, and environmental engineering are increasing. The unique training of the chemical engineer becomes essential in these areas whenever processes involve the chemical or physical transformation of matter. For example, ...Problems in environmental engineering that engage chemical engineers include the development of processes (catalytic converters, effluent treatment facilities) to minimize the release of or deactivate products harmful to the environment. To carry out these activities, the chemical engineer requires a complete and quantitative understanding of both the engineering and scientific principles underlying these technological processes.

Department: [Civil and Environmental Engineering](#)

Undergraduate Degrees Awarded: 21

Graduate Degrees Awarded: 211

Sustainability Learning Outcome:

The Civil and Environmental Engineering department is committed to finding solutions to our major sustainability challenges this century, and to educating and training the leaders who will have a large impact on our profession and on society. Join us in this important endeavor.

Department: [Comparative Studies in Race & Ethnicity](#)

Undergraduate Degrees Awarded: 14

Graduate Degrees Awarded: 0

Sustainability Learning Outcome:

The Interdepartmental Program in Comparative Studies in Race and Ethnicity (CSRE) is an interdisciplinary program offering students the opportunity to investigate the significance of race and ethnicity in all areas of human life. Devoted to a rigorous analysis of race and ethnicity and using a comparative and interdisciplinary approach, CSRE is committed to promoting and deepening students' understanding of the multiple meanings of racial diversity in the United States and abroad in ways that prepare students for living and working effectively in a multicultural society.

Department: [Earth Systems](#)

Undergraduate Degrees Awarded: 40

Graduate Degrees Awarded: 30

Sustainability Learning Outcome:

The Earth Systems Program is an interdisciplinary environmental science major. Students learn about and independently investigate complex environmental problems caused by human activities in interaction with natural changes in the Earth system. Earth Systems majors become skilled in those areas of science, economics, and policy needed to tackle the globe's most pressing environmental problems, becoming part of a generation of scientists, professionals, and citizens who approach and solve problems in a new way: a systematic, interdisciplinary way.

Department: [Earth, Energy and Environmental Sciences](#)

Undergraduate Degrees Awarded: 0

Graduate Degrees Awarded: 1

Sustainability Learning Outcome:

The goal of Earth, Energy, and Environmental Sciences (EEES) is to complement the disciplinary Earth Science and Engineering programs offered within the departments of the School of Earth Sciences and to train graduate students to integrate knowledge from these disciplines through tools and methods needed to evaluate the linkages among physical, chemical, and biological systems of the Earth, and understand the dynamics or evolution of these integrated systems and the resources they provide.

Department: [Education](#)

Undergraduate Degrees Awarded: 0

Graduate Degrees Awarded: 216

Sustainability Learning Outcome:

Aiming towards the ideal of enabling all people to achieve maximum benefit from their educational experiences, the Stanford University School of Education seeks to continue as a world leader in ground-breaking, cross-disciplinary inquiries that shape educational practices, their conceptual underpinnings, and the professions that serve the enterprise.

The School also seeks to develop the knowledge, wisdom, and imagination of its students to enable them to take leadership positions in efforts to improve the quality of education around the globe.

Department: [Energy Resources Engineering](#)

Undergraduate Degrees Awarded: 5

Graduate Degrees Awarded: 30

Sustainability Learning Outcome:

Energy resources engineers are concerned with the design of processes for energy recovery. Included in the design process are characterizing the spatial distribution of hydrocarbon and geothermal reservoir properties, drilling wells, designing and operating production facilities, selecting and implementing methods for enhancing fluid recovery, examining the environmental aspects of petroleum and geothermal exploration and production, monitoring reservoirs, and predicting recovery process performance. The program also has a strong interest in related energy topics such as renewable energy, global climate change, CO₂ sequestration, clean energy conversions (e.g., "clean coal"), and energy systems. The Energy Resources Engineering curriculum provides a sound background in basic sciences and their application to practical problems to address the complex and changing nature of the field. These principles apply equally well to optimizing oil recovery from petroleum reservoirs, geothermal energy production and remediating contaminated groundwater systems.

Department: [Engineering \(Includes Environmental Engineering\)](#)

Undergraduate Degrees Awarded: 103

Graduate Degrees Awarded: 13

Sustainability Learning Outcome:

The mission of the undergraduate program in Environmental Engineering is to equip students with the problem solving skills and knowledge necessary to assess and develop solutions to environmental problems impacting the biosphere, land, water, and air quality. Courses in the program are multidisciplinary in nature, combining fundamental principles drawn from physics, chemistry, geology, engineering, and biology. Students learn about the analytical methods necessary to evaluate environmental changes and to design strategies to prevent or remediate problems that inevitably result from human activities. The program prepares students for careers in consulting, industry, and government, and for graduate school in engineering.

Department: [Environmental Earth System Science](#)

Undergraduate Degrees Awarded: 0

Graduate Degrees Awarded: 4

Sustainability Learning Outcome:

Our shared goal is to understand, predict, and respond to human-caused environmental change at local to global scales. To take on this challenge, we strive to investigate the complexity of the global system, including the interactions, synergies, and feedbacks that link the oceans, atmosphere, land surfaces, and freshwater systems. A global perspective has emerged that challenges the research community to view and study the planet as a singular, highly-interactive system, moving past disciplinary approaches to evaluate the interactions among chemical, biological, and physical processes across the Earth's surface. Through the graduate and undergraduate programs, we will train a new generation of scientists that comprehend the multiple facets of environmental processes, and who are able to think synthetically, evaluating change in our oceans, water, air and land processes as part of an integrated and connected system. This is the directive of the Environmental Earth System Science Department, carried forth by faculty representing many interdisciplinary areas, talented graduate students and postdoctoral scholars, and experienced and creative research staff. We are distributed in laboratories and offices across the Stanford campus, with the department headquarters based in the Yang and Yamazaki Environment and Energy building.

Department: [Geological and Environmental Sciences](#)

Undergraduate Degrees Awarded: 4

Graduate Degrees Awarded: 7

Sustainability Learning Outcome:

The geological and environmental sciences are naturally interdisciplinary, and include the study of earth materials, earth processes, and how they have changed over Earth's 4.56 billion year history. More specifically, courses and research within the department address the chemical and physical makeup and properties of minerals and rocks (at pressures from the surface to the core), as well as of soils, sediments, and water; the formation and evolution of Earth and other planets; the processes that deform Earth's crust and mantle and that shape Earth's surface; the stratigraphic, paleobiological, and geochemical

records of Earth history including changes in climate, oceans, and atmosphere; present-day, historical, and long-term feedbacks between the geosphere and biosphere, and the origin and occurrence of our natural resources. The department's research is critical to the study of natural hazards (earthquakes, volcanic eruptions, landslides, and floods), environmental and geological engineering, surface and groundwater management, the assessment, exploration, and extraction of energy, mineral and water resources, remediation of contaminated water and soil, geological mapping and land use planning, and human health and the environment.

Department: [Geophysics](#)

Undergraduate Degrees Awarded: 0

Graduate Degrees Awarded: 15

Sustainability Learning Outcome:

Geophysics is a field that integrates geology, mathematics, and physics in order to understand how the Earth works. Geophysicists study Earth processes through a combination of laboratory experiments, computational and theoretical modeling, remote imaging, and direct observation. Research in the Geophysics Department at Stanford has both fundamental and strategic elements. Our students benefit from this breadth of exposure and are highly sought after for rewarding careers in academia, industry, and government.

Department: [Graduate School of Business](#)

Undergraduate Degrees Awarded: 0

Graduate Degrees Awarded: 468

Sustainability Learning Outcome:

The mission of the Graduate School of Business is to create ideas that deepen and advance the understanding of management and, with these ideas, develop innovative, principled, and insightful leaders. The two-year Master of Business Administration (M.B.A.) degree program is for students who aspire to contribute to society through leadership in business, government, and the nonprofit sector. The general management curriculum rests on a foundation of social science principles and management functions layered with interdisciplinary themes of leadership, entrepreneurship, global management, and social responsibility. A number of joint degree programs allow the M.B.A. to be combined with degrees in the Schools of Education, Law, and Medicine, as well as interdisciplinary degrees in Public Policy and Environmental Studies.

Department: [Human Biology](#)

Undergraduate Degrees Awarded: 191

Graduate Degrees Awarded: 0

Sustainability Learning Outcome:

The Program in Human Biology is an interschool, interdepartmental, undergraduate major. The program's mission is to provide an interdisciplinary approach to understanding the human being from

biological, behavioral, social, and cultural perspectives. The curriculum provides a broad and rigorous introduction to the biological and behavioral sciences and their interrelationships, and explores how this knowledge, in conjunction with studies in other fields, can be applied to formulate and evaluate health, environmental, and other public policies that influence human welfare. Majors later pursue advanced training in professional or graduate programs, or work in diverse sectors.

Department: [Interdisciplinary Program in Environment and Resources](#)

Undergraduate Degrees Awarded: 0

Graduate Degrees Awarded: 20

Sustainability Learning Outcome:

Stanford's Emmett Interdisciplinary Program in Environment and Resources (E-IPER) is designed to create interdisciplinary scholars and leaders to address the world's most challenging environmental and sustainability problems. E-IPER students combine academic disciplines, including natural and earth sciences, engineering, economics, humanities, social sciences, law, health, policy, and business, to yield new insights and novel solutions to urgent global problems, such as energy use, climate change, food security, freshwater availability, depletion of ocean resources, land degradation, and biodiversity loss.

Department: [International Policy Studies](#)

Undergraduate Degrees Awarded: 0

Graduate Degrees Awarded: 21

Sustainability Learning Outcome:

The Ford Dorsey Program in International Policy Studies (IPS) is an analytical interdisciplinary program focusing on international policy analysis. Its goal is to provide students with exposure to issues they will face in international business and public policy, and to develop the skills and knowledge to address those issues. The program allows students to specialize in: democracy, development, and the rule of law; energy, environment, and natural resources; global health; global justice; international negotiation and conflict management; international political economy; or international security and cooperation.

Department: [Law](#)

Undergraduate Degrees Awarded: 0

Graduate Degrees Awarded: 261

Sustainability Learning Outcome:

All JD students must complete at least one advanced course...of ethics instruction." Additionally, "The ethical codes of the American legal profession provide that lawyers should aspire to provide significant pro bono publico legal service. Stanford Law School similarly expects its students and faculty to aspire to provide such service. For purposes of this policy, pro bono legal work includes any uncompensated public service in which legal skills are exercised. Students should volunteer at least 50 hours of law-related pro bono work without compensation or

academic credit before graduation. Clinical coursework over and above the number of hours set by clinical instructors as appropriate for their course may be counted toward this standard. Students who meet the aspirational standard will be designated members of the Pro Bono Awards Program.

Department: [Materials Science and Engineering](#)

Undergraduate Degrees Awarded: 10

Graduate Degrees Awarded: 55

Sustainability Learning Outcome:

Developing materials for renewable energy and sustainability applications is critical to our planet's future. Materials Science & Engineering faculty and students are exploring interests and area of expertise in photovoltaics, energy storage, and hydrogen storage, among others.

Department: [Mechanical Engineering](#)

Undergraduate Degrees Awarded: 56

Graduate Degrees Awarded: 166

Sustainability Learning Outcome:

The programs in the Department of Mechanical Engineering (ME) emphasize a mix of applied mechanics, biomechanical engineering, computer simulations, design, and energy science and technology. Since mechanical engineering is a broad discipline, the undergraduate program can be a springboard for graduate study in business, law, medicine, political science, and other professions where understanding technology is important. Both undergraduate and graduate programs provide technical background for work in biomechanical engineering, environmental pollution control, ocean engineering, transportation, and other multidisciplinary problems that concern society. In all programs, emphasis is placed on developing systematic procedures for analysis, communication of work and ideas, practical and aesthetic aspects in design, and responsible use of technology.

Department: [Science, Technology, and Society](#)

Undergraduate Degrees Awarded: 60

Graduate Degrees Awarded: 0

Sustainability Learning Outcome:

The mission of the Science, Technology and Society (STS) Program is to provide Stanford undergraduates with intellectually stimulating education that will prepare them for life in the contemporary era, one in which science and technology are pervasive and potent forces for transformative social change. To that end, STS courses explore the evolving natures and interrelationship of science and technology, influences of science and technology on different kinds of societies, how societies manage and otherwise shape their scientific and technological endeavors and products, and ethical, social, cultural, and policy issues raised by scientific and technological innovations in contemporary societies. STS faculty believe that probing study of this vital subject matter provides an innovative form of liberal arts and pre-professional education, one that helps STS students fulfill their future civic and professional roles in an informed,

responsible manner. STS is an interdisciplinary and multidisciplinary program. STS students learn to critically analyze the interplay of science and technology with human values and world views, political and economic forces, and cultural and environmental systems. To a set of core STS courses promoting such learning, Program majors add structured sets of pertinent disciplinary courses in the humanities, social sciences, natural sciences, and engineering.

Department: [Sociology](#)

Undergraduate Degrees Awarded: 13

Graduate Degrees Awarded: 38

Sustainability Learning Outcome:

The mission of the undergraduate program in Sociology is to provide students with the skills necessary to understand and address social problems and inequalities in global, institutional, and interpersonal social relations.

Department: [Urban Studies](#)

Undergraduate Degrees Awarded: 21

Graduate Degrees Awarded: 0

Sustainability Learning Outcome:

The Urban Studies program treats urbanism as an interdisciplinary field; it brings together students, faculty, and outside specialists concerned with cities, and the impacts of cities on society and people's lives. The Urban Studies major encourages students to inquire deeply into the nature of cities and the techniques used to modify urban environments. It prepares students to address urbanization, and gives students a knowledge base and theoretical, analytical, and practical skills to understand urban social systems and effect social change.