Sustainable Environmental Design

Bachelor of Arts (BA)

The Sustainable Environmental Design major recognizes that the emergent, multidisciplinary field of sustainability science is growing rapidly. As the world population urbanizes, the planning and design of resilient, resource-efficient, healthy and socially just cities and metropolitan regions is profoundly important. The College of Environmental Design, with its long-standing expertise in sustainable urbanism and design, is an ideal setting for an undergraduate major in sustainable environmental design, with a focus on the built environment.The sustainable environmental design major recognizes that the emergent, multidisciplinary field of sustainability science is growing rapidly.

The major offers students a critical understanding of the sustainability challenges facing urban regions in California and around the globe and equips them with the technical, analytic, and design tools key to devising creative solutions. Graduates have many career paths and fields of graduate study open to them. Students who complete this major will obtain the following:

1. Understand the application of physical, biological, and social science in the design of sustainable cities and metropolitan regions.
2. Understand sustainable urban technologies and design strategies.
3. Comprehend issues of equity and social justice as they relate to sustainable cities and regions.
4. Evaluate and monitor the present state and future potential of built environments in terms of sustainability.
5. Comprehend the implications of policy and institutions and their potential to shape future sustainable cities and regions.

Program Overview

Features of the major include the following:

- The gateway course, LD ARCH 12, Environmental Design for Sustainable Development, introduces students to the scientific basis of sustainability as explored through the study of energy, water, food, natural resources and the built environment with a focus on the application of this knowledge to sustainable development strategies.
- A critical approaches course, ENV DES 102 Critical Debates in Sustainable Urbanism. The course challenges students to think critically about the idea of sustainability, develop critiques of current sustainable urbanism/design practice, and envision the institutional and behavioral changes required for a more sustainable future.
- A methods/technology course, LD ARCH C188 /GEOG C188 Geographic Information Systems (GIS). GIS has become a basic tool for a wide range of analytic tasks across all environmental design fields. The course addresses both GIS theory and applications, offering a dynamic analytical framework for gathering, integrating, interpreting, and manipulating temporal and spatial data.
- A set of upper division courses on energy and environment, deep green design, the nature of cities, planning for sustainability, ecological analysis, and sustainable cities and landscapes.
- A series of area requirements allowing students to specialize in a variety of aspects of sustainability such as economics, business, and policy, society, culture, and ethics, resources and environmental management, or design and technology.
- A capstone workshop course, ENV DES 106 Sustainable Environmental Design Workshop. Linking sustainability science and technology with urban form and social dynamics, the workshop requires independent and collaborative research with an external client organization to offer innovative strategies for sustainable environmental design.

Admission to the Major

Students must declare one of the CED majors at the time of application to the college; however, current UC Berkeley students may apply to change into CED. Transfer applicants must complete two years worth of lower division coursework to be considered for admission to CED. For information regarding admission to the major for freshman, transfer students, and current students who wish to change majors or colleges, please see the College of Environmental Design (CED) page (http://guide.berkeley.edu/archive/2015-16/undergraduate/colleges-schools/environmental-design/#choosingamajortext) in this Guide, or the CED website (http://ced.berkeley.edu/admissions/undergraduate) .

Sustainable Design Minor Program

Sustainable design implies making decisions at various scales of the built environment (buildings, communities, land use patterns, urban support systems) in ways that support environmental quality, social equity, and economic vitality. The undergraduate minor in sustainable design is jointly offered by the Department of Architecture and the Department of Landscape Architecture and Environmental Planning, but it also includes interdisciplinary courses across campus. The minor is open to all majors at UC Berkeley.

For the minor to be added to students' transcripts, they must file the CED Minor Completion form (http://www.ced.berkeley.edu/downloads/forms/academic/ced_minor-completion.pdf) with the Office of Undergraduate Advising in 250 Wurster Hall during the semester in which they complete their last class for the minor.

In addition to the University, campus, and college requirements, listed on the College Requirements tab, students must fulfill the below requirements specific to their major program.

General Guidelines

1. All lower division courses taken in fulfillment of major requirements must be completed with a grade of C- or better.
2. Courses taken to fulfill lower division major requirements may also be used to fulfill Seven-Course Breadth.
3. A minimum grade point average (GPA) of 2.0 must be maintained in upper and lower division courses used to fulfill the major requirements.
4. A minimum overall GPA of 2.0 for all courses taken at UC Berkeley is required for graduation.
5. Courses used to fulfill an upper division major requirement may not simultaneously fulfill a breadth requirement.

For information regarding residence requirements and unit requirements, please see the College Requirements tab.

Summary of Major Requirements

Lower Division Requirements: Five Courses

Upper Division Sustainable Environmental Design Core: Nine Courses

Sustainable Environmental Design Area Requirements: Four Courses

Lower Division Major Requirements: Freshman and Sophomore Year

LD ARCH 12	Environmental Science for Sustainable Development	4
MATH 16A	Analytic Geometry and Calculus	3-4
or MATH 1A	Calculus	
STAT 2	Introduction to Statistics (or higher)	4
PHYSICS 7A	Physics for Scientists and Engineers	4
or PHYSICS 8A	Introductory Physics	
Select one of the following:		4
ECON 1	Introduction to Economics	
ECON 2	Introduction to Economics--Lecture Format	
ENVECON C1/ECON C3	Introduction to Environmental Economics and Policy	

Upper Division Sustainable Environmental Design Core (Courses Inside CED)

ENV DES 102	Critical Debates in Sustainable Urbanism	3
LD ARCH 110	Ecological Analysis	3
CY PLAN 119	Planning for Sustainability	3
ARCH 140	Energy and Environment	4
LD ARCH 130	Sustainable Landscapes and Cities	4
ARCH 242	Sustainability Colloquium	2
LD ARCH/GEOG C188	Geographic Information Systems	4
ENV DES 100	The City: Theories and Methods in Urban Studies	4
ENV DES 106	Sustainable Environmental Design Workshop	5

Sustainable Environmental Design Area Requirements

The intent of area courses is to provide students with opportunities to deepen their knowledge about specific issues in sustainability. Each of the area requirements focuses on an essential aspect of sustainability with the premise that urban sustainability is a multi-dimensional problem and sustainable environments emerge from the intersection of technology, design, economics, policy, and societal change.

Choose four courses: one from each of the following four areas or two courses from two areas for specializations. A course used to fulfill an upper division major requirement may not also be used to fulfill seven course breadth.

Economics, Business and Policy

CY PLAN 113A	Economic Analysis for Planning	3
CY PLAN 113B	Community and Economic Development	3
CY PLAN/IAS/ GPP 115	Urbanization in Developing Countries	4
ENVECON 100	Microeconomic Theory with Application to Natural Resources	4
ENVECON/IAS C175	The Economics of Climate Change	4
ENE,RES 190	Seminar in Energy and Resources Issues	3
ESPM 60	Environmental Policy, Administration, and Law	4
ESPM 166	Natural Resource Policy and Indigenous Peoples	4
ESPM 168	Political Ecology	4
ESPM 169	International Environmental Politics	4
ESPM/EDUC C193A	Environmental Education	3
PUB POL 182	Environment and Technology from the Policy and Business Perspective	4
UGBA 107	The Social, Political, and Ethical Environment of Business	3
UGBA 180	Introduction to Real Estate and Urban Land Economics	3

Society, Culture and Ethics

ANTHRO 137	Energy, Culture and Social Organization	4
ARCH 110AC	The Social and Cultural Processes in Architecture & Urban Design	4
ARCH 133	Architectures of Globalization: Contested Spaces of Global Culture	3
CY PLAN 118AC	The Urban Community	4
ENE,RES C100	Energy and Society	4
ENE,RES 101	Ecology and Society	3
ESPM 151	Society, Environment, and Culture	4
ESPM 161	Environmental Philosophy and Ethics	4
ESPM 163AC	Environmental Justice: Race, Class, Equity, and the Environment	4
ESPM C167/ PB HLTH C160	Environmental Health and Development	4
ESPM 155	Course Not Available	4
ESPM 168	Political Ecology	4
LD ARCH 140	Social and Psychological Factors in Open Space Design	3
LD ARCH 141AC	The American Landscape: Multicultural Difference and Diversity	3

Resources and Environmental Management

ENE,RES 102	Quantitative Aspects of Global Environmental Problems	4
EPS 170AC	Course Not Available	4
ESPM 50AC	Introduction to Culture and Natural Resource Management	4
ESPM 102D	Climate and Energy Policy	4
ESPM 102C	Resource Management	4
ESPM 117	Urban Garden Ecosystems	4
INTEGBI 152	Environmental Toxicology	4

Design and Technology

ARCH 11A	Introduction to Visual Representation and Drawing (Formerly ENV DES 11A)	4
ARCH 11B	Introduction to Design (Formerly ENV DES 11B)	5
ARCH 105	Deep Green Design (Formerly ENV DES 105)	4
ARCH 122	Principles of Computer Aided Architectural Design	4

ARCH 130	Introduction to Architectural Design Theory and Criticism	4
ARCH 149/249	Special Topics in Energy and Environment	4
ARCH 160	Introduction to Construction	4
CY PLAN/ARCH 111	Introduction to Housing: An International Survey	3
CY PLAN 114	Introduction to Urban and Regional Transportation	3
CY PLAN 116	Urban Planning Process--The Undergraduate Planning Studio	4
CY PLAN 140	Urban Design: City-Building and Place-Making	3
ENE,RES 175	Water and Development	4
GEOG 125	The American City	4
INFO 146	Course Not Available	3
LD ARCH 1	Drawing a Green Future: Fundamentals of Visual Representation and Creativity	4

Students who have a strong interest in an area of study outside their major often decide to complete a minor program. These programs have set requirements and are noted officially on the transcript in the memoranda section, but they are not noted on diplomas.

General Guidelines

1. All upper division courses used to fulfill minor requirements must be completed with a letter grade grade of C- or above.
2. Any course used in fulfillment of minor requirements may also be used to fulfill major and upper division CED non-major requirements.
3. Courses used to fulfill a breadth requirement may also be used to satisfy minor requirements.
4. Students may apply the non-CED version of a CED cross-listed course towards the minor.

Sustainable Design Minor Requirements

Lower Division

Select one course from the following:

AP Environmental Science, Passing Score of 3, 4, or 5		
CIV ENG 11	Engineered Systems and Sustainability	
CIV ENG 70	Engineering Geology	
ENV DES 1	Introduction to Environmental Design	
ENV DES 4A	Design and Activism	
ENV DES 4B	Global Cities	
ENV DES 4B	Global Cities	
ENV DES 4C	Future Ecologies: Urban Design, Climate Adaptation, and Thermodynamics	
ENV SCI 10	Introduction to Environmental Sciences	
ESPM 2	The Biosphere	
ESPM C10	Environmental Issues	
GEOG 1	Global Environmental Change	
LD ARCH 12	Environmental Science for Sustainable Development	

Upper Division (5 courses)

Select five courses from the following; a minimum of two courses must be selected from CED courses and a minimum of two courses selected from non-CED courses

CED courses	
ARCH 105	Deep Green Design
ARCH 140	Energy and Environment
ARCH 149	Special Topics in Energy and Environment [1]
ARCH 169	Special Topics in Construction Materials [1]
ARCH 240	Advanced Study of Energy and Environment
ARCH 241	Research Methods in Building Sciences
ARCH 242	Sustainability Colloquium [2]
ARCH 243	Natural Cooling: Sustainable Design for a Warming Planet
ARCH 244	The Secret Life of Buildings
ARCH 245	Daylighting
ARCH 249	Special Topics in the Physical Environment in Buildings [1]
CY PLAN 114	Introduction to Urban and Regional Transportation
CY PLAN 115	Urbanization in Developing Countries
CY PLAN 119	Planning for Sustainability
CY PLAN 140	Urban Design: City-Building and Place-Making
CY PLAN 254	Sustainable Communities
CY PLAN C256	Healthy Cities
ENV DES 198	Directed Group Study (Building Sustainabilty section and Leadership in Sustainable Design section) [2]
LD ARCH 103	Energy, Fantasy, and Form
LD ARCH 110	Ecological Analysis
LD ARCH 111	Plants in Design
LD ARCH 122	Hydrology for Planners,Environmental Science for Sustainable Development
LD ARCH 130	Sustainable Landscapes and Cities
LD ARCH 138A	The Metropolitan Landscape
LD ARCH C188	Geographic Information Systems
LD ARCH 225	Urban Forest Planning and Management
Non-CED courses	
ANTHRO 137	Energy, Culture and Social Organization
CIV ENG 103	Introduction to Hydrology
CIV ENG 107	Climate Change Mitigation
CIV ENG 113N	Course Not Available
CIV ENG 292A	Technologies for Sustainable Societies [3]
ENE,RES 101	Ecology and Society
ENE,RES 102	Quantitative Aspects of Global Environmental Problems
ENE,RES 175	Water and Development
ENE,RES C100	Energy and Society
ENE,RES 190	Seminar in Energy and Resources Issues ("Behavior and Sustainability" or "California Water and Society")
ENVECON C1	Environmental Economics
ENVECON C102	Natural Resource Economics
ENVECON 162	Economics of Water Resources
ENVECON C175	The Economics of Climate Change
ENV SCI 125	Environments of the San Francisco Bay Area
ESPM 117	Urban Garden Ecosystems

ESPM 151	Society, Environment, and Culture
ESPM 155	Course Not Available
ESPM 161	Environmental Philosophy and Ethics
ESPM 163AC	Environmental Justice: Race, Class, Equity, and the Environment
ESPM C167	Environmental Health and Development
ESPM 168	Political Ecology
ESPM 102D	Climate and Energy Policy (Behavior and Sustainability)
GEOG 130	Food and the Environment
PUB POL 182	Environment and Technology from the Policy and Business Perspective

[1]   Special topics courses will be evaluated each semester by student request. Please ask the relevant staff adviser if a course has been reviews and/or approved. ARCH 149, ARCH 169, and ARCH 249 must be minimum 2 units.

[2]   The ARCH 242 colloquium and ENV DES 198 may only count as a third CED course, and may be taken *Pass/No Pass* for either 1 or 2 units.

[3]   CIV ENG 292A may only count as a third non-CED course.

For College Requirements, please refer to the College of Environmental Design (http://guide.berkeley.edu/archive/2015-16/undergraduate/colleges-schools/environmental-design/#collegerequirementstext) .

Each student's plan will vary depending on interests. Students should see their adviser if they are interested in applying for graduate school, studying abroad, attending summer school, or pursuing a minor or second major.

For more detailed information regarding the courses listed below (e.g., elective information or GPA requirements), please see the Major Requirements tab.

Freshman

Fall	Units	Spring	Units
ENV DES 1	3	Reading & Composition B	4
Reading & Composition A	4-6	PHYSICS 8A (Fills Breadth #2, PS)	4
MATH 16A or 1A	3-4	ENV DES 4A, 4B, or 4C (2 of 3 required for graduation)	3
LD ARCH 12 (Fills Breadth #1, BS)	4	Breadth #3	3-4
	14-17		14-15

Sophomore

Fall	Units	Spring	Units
STAT 2	4	ECON 1 (Fills Breadth #6, SBS)	4
ENV DES 4A, 4B, or 4C (2 of 3 required to graduate)	3	ENV DES 4A, 4B, or 4C (2 of 3 required to graduate)	3
Breadth #4	3-4	Breadth #7	3-4
Breadth #5	3-4	Elective, if needed to reach 12 units	2
	13-15		12-13

Junior

Fall	Units	Spring	Units
ENV DES 102	3	ARCH 140	4
LD ARCH 110	3	LD ARCH 130	4
CY PLAN 119	3	SED Area Requirement #2	2-4
SED Area Requirement #1	2-4	SED Area Requirement #3	2-4
Elective, if needed to reach 12 units	1		
	12-14		12-16

Senior

Fall	Units	Spring	Units
ARCH 242	2	ENV DES 100	4
LD ARCH C188 or GEOG C188	4	ENV DES 106	5
SED Area Requirement #4	2-4	Elective, if needed to reach 12 units	3
Elective, if needed to reach 12 units	4		
	12-14		12

Total Units: 101-116

Students must complete 120 units to graduate.

Learning Goals of the Major

1. Understand the application of physical, biological, and social science in the design of sustainable cities and metropolitan regions.
2. Understand sustainable urban technologies and design strategies.
3. Comprehend issues of equity and social justice as they relate to sustainable cities and regions.
4. Evaluate and monitor the present state and future potential of built environments in terms of sustainability.
5. Comprehend the implications of policy and institutions and their potential to shape future sustainable cities and regions.

The CED Office of Undergraduate Advising provides a wide array of programmatic and individual advising services to prospective and current students as well as to students in other colleges who are pursuing CED minors or taking CED courses. The professional advising team assists students with a range of issues including course selection, academic decision-making, achieving personal and academic goals, and maximizing the Berkeley experience.

Advising Staff

Architecture Major Adviser Rhommel Canare
250 Wurster Hall
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510-642-4944

Landscape Architecture Major Adviser Omar Ramirez
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Sustainable Environmental Design Major Adviser Nancy Trinh
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510-642-0408

Associate Dean for Undergraduate Studies Renee Chow
382D Wurster Hall
rychow@berkeley.edu

Advising Hours

Fall/spring: Monday through Friday, 10 to noon (office opens at 9 a.m.) & 1 to 4 p.m.
Summer: Monday through Friday, 10 to noon & 1 to 3 p.m.

Address

Office of Undergraduate Advising
College of Environmental Design
250 Wurster Hall #1800
University of California
Berkeley, CA 94720-1800
510-642-4943

CED Career Services

The CED Career Services Center (CSC) offers personalized career counseling, a yearly CED Career Fair, and a wide variety of professional-development workshops on topics such as licensure, internships, and applying for graduate school. To schedule an appointment with the Career Counselor or for more information on CED CSC, please click here (http://ced.berkeley.edu/ced/students/career) .

Office of Undergraduate Advising (http://ced.berkeley.edu/ced/students/undergraduate-advising)

- Newly-Admitted Students (http://ced.berkeley.edu/ced/students/undergraduate-advising/newly-admitted-students)
- Current Students (http://ced.berkeley.edu/ced/students/undergraduate-advising/continuing-students)
- Graduation and Commencement (http://ced.berkeley.edu/ced/students/undergraduate-advising/graduation-commencement)
- Services and Contract (http://ced.berkeley.edu/ced/students/undergraduate-advising/services-contract)
- Articulation (http://ced.berkeley.edu/ced/students/undergraduate-advising/articulation)
- Policies and Resources (http://ced.berkeley.edu/ced/students/undergraduate-advising/policies-resources)

- Forms and Documents (http://ced.berkeley.edu/ced/students/undergraduate-advising/forms-documents)

Mission

The College of Environmental Design (CED) Office of Undergraduate Advising helps students graduate in a timely way with a meaningful educational experience at Berkeley. In alignment with the College's Vision and Principles, the Office of Undergraduate Advising collaborates with CED faculty, deans, and student service units across campus toward the common objective of supporting students as they achieve their educational and career goals. Goals include the following:

- Attract a highly-motivated, diverse pool of applicants
- Connect students with resources that match their goals and aspirations
- Support the development and transformation of undergraduates as they become educated, active, and socially just citizens of the world
- Prepare graduates who are uniquely qualified and highly sought after in their field of choice.

Advising Values

Student Success. Above all, the College dedicates itself to maximizing student potential and to helping students succeed in their university experiences. Advisers encourage students to explore their minds and their hearts, challenge them to do their best work, and help them realize their talents and passions and achieve their goals.

Equity & Inclusion. CED is committed to creating an inclusive environment in which any individual or group can be and feel welcomed, respected, supported, and valued. Advisers aspire to provide fair treatment, access, opportunity, and advancement for all students and to identify and eliminate barriers that prevent the full participation of all.

Health & Well-Being. CED collaborates with campus partners to keep the community healthy by helping students balance the physical, intellectual, emotional, social, occupational, spiritual, and environmental aspects of life.

Advising Excellence. In all that it does, the College strives to deliver personalized advising services of the highest quality by continuously educating itself on developments in the field and to evaluate, improve, and streamline services to support students in obtaining the best education and experience possible.

Student Groups and Organizations

The college provides opportunities for students to be involved in student chapters of professional organizations such as the American Institute of Architects (AIAS), the American Society of Landscape Architects (ASLA) as well as other student groups like the Chican@/Latin@ Architecture Student Association (CASA), Global Architecture Brigades, and more. For information regarding student groups, please see the Getting Involved page of the CED website (http://ced.berkeley.edu/ced/students/undergraduate-advising/getting-involved/#orgs) .

Study Abroad

The College of Environmental Design (CED) encourages all undergraduates in the college to study abroad. Whether students are interested in fulfilling general education requirements, taking courses related to their major/career, or simply living and studying in a country that is of interest to them, the department will work with students to make

it happen. For information about study abroad programs, please see the Berkeley Study Abroad website (http://studyabroad.berkeley.edu) .

CED Career Services

The CED Career Services Center (CSC) offers personalized career counseling, a yearly CED Career Fair, and a wide variety of professional-development workshops on topics such as licensure, internships, and applying for graduate school. For further information, please see the CED Career Services website (http://ced.berkeley.edu/ced/students/career) .

Prizes and Awards

CED offers a number of annual prizes, awards, scholarships, fellowships, and grants to its currently enrolled students. Some of these prizes and awards are college-wide and some are geared toward students in specific majors. For general information regarding CED prizes and awards, including application instructions and a deadline calendar, please click here (http://ced.berkeley.edu/ced/students/prizes) .

CED Events and Exhibits Calendar

CED and Wurster Hall are home to a variety of events, lectures, and exhibitions that welcome professors, professionals, and friends to the college to discuss and celebrate the community and professions. Through events and media, the College of Environmental Design is constantly creating ways to keep the college connected and up-to-date. To view this calendar, please click here (http://ced.berkeley.edu/events-media/events) .

CED on Facebook (https://www.facebook.com/groups/59611725522)

CED on Twitter (https://twitter.com/CEDNews)

Cal Design Lab

The Cal Design Lab at Wurster Hall is an experimental studio space to promote hands-on, interdisciplinary design activities. Faculty and students from UC Berkeley's many schools and departments can come together at the Cal Design Lab to work on critical design challenges. The goal of the lab is to be a nexus for design research and practice and to facilitate discourse that transcends different design disciplines. For further information, please see the Cal Design Lab's website (http://ced.berkeley.edu/research/cal-design-lab) .

CED Lecture Series

The Departments of Architecture, City and Regional Planning, and Landscape Architecture and Environmental Planning each sponsor lecture series, which offers students the opportunity to hear internationally-acclaimed speakers. These speakers often also participate in classes and seminars as part of their visit to campus. For a schedule of speakers and events in these lecture series, please see the CED website (http://ced.berkeley.edu/events-media/lecture-series) .

CED Mentorship Program

Mentors are an invaluable resource for current students, and one of the strengths of the College of Environmental Design is its strategic partnership with practicing professionals, many of whom are CED graduates. The CED Mentorship Program (http://www.ced.berkeley.edu/mentorship/login.php) offers students opportunities to develop a better understanding of the various professions in the fields of design and planning through the guidance and insight of knowledgeable alumni.

Research Opportunities, Internships, Public Service, and Volunteer Opportunities

Check out the CED Office of Undergraduate Advising website (http://ced.berkeley.edu/ced/students/undergraduate-advising) for additional opportunities.