

University of Southern California School of Architecture

Architecture 537

Urban Plant Ecology: Natural Perspectives

3 Units: 3 Hour Lecture

Tuesday 1:00-4:00 p.m.

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Office hours: Tuesday 12-1 pm by appointment

Background:

We are increasingly challenged to pursue and achieve higher levels of sustainability and benefit in all areas of our urban environment, including the landscapes. Many conventional landscape practices rely upon the heavy use of energy, water and other resources to build and maintain them. As a result, urban landscapes typically lead to a net depletion of environmental resources as well as add to greenhouse gas production and other forms of urban pollution.

Information found in the study of plant physiology and morphology, and the principles and concepts of plant ecology can provide a framework that can help achieve urban landscapes with increased levels of sustainability and benefit. This framework can be refined through the focused study of California native plant communities and species that can be incorporated into urban landscapes with increased levels of sustainability. Such information and effort is fully consistent with the USC 2010 Imperative Statement supporting ecological literacy among faculty and students: "The design should engage the environment in a way that dramatically reduces or eliminates the need for fossil fuel."

Course Description:

Architecture 537 involves (1) the review of information found in plant physiology, and ecological principles and concepts of sustainability found in natural systems, (2) the study of native and introduced plant species and plant associations of Southern California and (3) calculations and data used to estimate water and energy use associated with urban landscapes.

The primary purpose of this course is to develop a foundation for the design of urban landscapes that provide greater benefits and achieve higher levels of sustainability than current landscapes. Learning will be achieved through lectures, discussions, campus planting identification walks and field trips. Lectures will incorporate a series of weekly exercises and readings.

Learning Objectives:

- a. To achieve a working knowledge of the principal native plant communities, species and cultivars of California, including: coastal sage scrub, chaparral, riparian, oak & walnut woodland, and low desert.
- b. To build a foundation of plant identification skill and knowledge through weekly plant study walks, lectures and local field trip activities.
- c. To describe ways the principles and concepts of plant ecology, plant physiology and plant morphology can be applied to urban landscapes for increased levels of sustainability.
- d. To establish a framework for the ongoing study of plants for use in urban landscapes with awareness of climate, habitat, water and energy factors.
- e. To describe an energy-based approach for measuring landscape sustainability and the carbon footprint of urban landscapes modeled after natural landscape systems.
- f. To achieve an introductory knowledge for preparing landscape plant palettes, water and energy budgets, and addressing fire safety and invasive plant issues.

Expected Results:

Upon completion of this course each student should be able to:

- a. Identify and describe the key native plant communities and environmental conditions of southern California.
- b. Be capable of identifying 25-30 of the principal California native plant species associated with the sage scrub, chaparral, oak & walnut woodland, and riparian plant communities of Southern California, and their significant environmental adaptations and morphological characteristics.
- c. Describe sustainable urban planting concepts based on the understanding of ecological principles, and the plant communities and species studied.
- d. Describe landscape best management practices, landscape water budget calculations, and energy/carbon budgets for urban landscapes.

Course Methodology

A number of learning techniques are planned for this course, including:

- a. Lectures and discussions on topics of principles of ecology, plant physiology, plant communities, and sustainability.
- b. Weekly lectures along with 3 required weekend field trips are planned for identification of plant species and communities, and to see local planting project examples.
- c. Assigned reading and research, and preparation of written profiles on plant species and communities, and special topic written papers.
- d. Plant palette, water budget and carbon/energy budget sketch exercises.

Attendance and Grading:

Attendance is required for all lectures, campus plant identification walks and off-campus field trips. Absence from field trips requires independent field trip completion within one week of the initial field trip date.

More than one absence can result in the lowering of the course grade by 1/3 for each additional absence up to a maximum lowering of 1 letter grade in the course. Classroom activities missed during an absence must be completed prior to the next class. All late work must be submitted no later than one week following the posted deadline and can receive a maximum 90% value. The basis for the course grade is divided among the following activities.

Lecture Exercises/Assignments	30%
Plant Profile Sheets & Quizzes	20%
Midterm Exam	20%
Final Course Exercise	30%
	<u>100%</u>

Points are assigned for all plant ID profiles, exercises, assignments, papers, quizzes and exams. Grades for each assignment, project and exams for the course is based upon the following scale:

94-100%	=	A
90-93%	=	A-
86-89%	=	B+
83-85%	=	B
80-82%	=	B-
76-79%	=	C+
73-75%	=	C
70-72%	=	C-
66-69%	=	D+
63-65%	=	D
60-62%	=	D-

Required Texts:

Bornstein, Carol; Fross, David, and O'Brien, Bart, California Native Plants for the Garden, Cachuma Press

Support References:

ASLA Sustainable Sites Initiative: <http://www.sustainablesites.org/>

Bay Friendly Landscape Guidelines:
<http://www.portofoakland.com/pdf/environment/BFLGComplete.pdf>

Perry, Bob, Landscape Plants for California Gardens,
Land Design Publishing

Keator, Glenn; and Middlebrook, Alrie
Designing California Native Gardens
The Plant Community Approach to Artful, Ecological Gardens
UC Press, 2007

Thompson, William J., and Sorvig, Kim, Sustainable Landscape Construction, Island Press. Second Edition.

Sunset Western Garden Book, latest edition

Bakker, Elna, An Island Called California, University of California Press,
Berkeley

Barbour, Michael G. and Major, Jack, Terrestrial Vegetation of California, John Wiley and Sons.

Hickman, James, ed., The Jepson Manual, Higher Plants of California,
University of California Press

Hatch, Charles, Trees of the California Landscape, University of California Press

Sawyer, John O., Keeler-Wolf, Todd, A Manual of California Vegetation
California Native Plant Society

Statement on Academic Conduct and Support Systems

Policies

Statement for Students with Disabilities

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to TA) as early in the semester as possible. DSP is located in STU 301 and is open 8:30 A.M.–5:00 P.M., Monday through Friday. The phone number for DSP is (213) 740-0776.

Academic Conduct

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in *SCampus* in Section 11, *Behavior Violating University Standards* <https://scampus.usc.edu/1100-behavior-violating-university-standards-and-appropriate-sanctions/>. Other forms of academic dishonesty are equally unacceptable. See additional information in *SCampus* and university policies on scientific misconduct, <http://policy.usc.edu/scientific-misconduct/>.

Discrimination, sexual assault, and harassment are not tolerated by the university. You are encouraged to report any incidents to the *Office of Equity and Diversity* <http://equity.usc.edu/> or to the *Department of Public Safety* <http://capsnet.usc.edu/department/departement-public-safety/online-forms/contact-us>. This is important for the safety whole USC community. Another member of the university community – such as a friend, classmate, advisor, or faculty member – can help initiate the report, or can initiate the report on behalf of another person. *The Center for Women and Men* <http://www.usc.edu/student-affairs/cwm/> provides 24/7 confidential support, and the sexual assault resource center webpage sarc@usc.edu describes reporting options and other resources.

Accreditation

The Master of Landscape Architecture degree program includes three curricula. Curriculum +3 for students with no prior design education and Curriculum +2 for students admitted with advanced standing have full accreditation by the Landscape Architecture Accreditation Board. Information about landscape architecture education and accreditation in the United States may be found on-line at <http://www.asla.org/Education.aspx>.

Religious Holidays

The University of Southern California recognizes the diversity of our community and the potential for conflicts involving academic activities and personal religious observation. The University provides a guide to such observances for reference and suggests that any concerns about lack of attendance or inability to participate fully in the course activity be fully aired at the start of the term. As a general principle, students should be excused from class for these events if properly documented and if provisions can be made to accommodate the absence and make up the lost work. Constraints on participation that conflict with adequate participation in the course and cannot be resolved to the satisfaction of the faculty and the student need to be identified prior to the add/drop date for registration. After the add/drop date the University and the School of Architecture shall be the sole arbiter of what constitutes appropriate attendance and participation in a given course.

Support Systems

A number of USC’s schools provide support for students who need help with scholarly writing. Check with your advisor or program staff to find out more. Students whose primary language is not English should check with the *American Language Institute* <http://dornsife.usc.edu/ali>, which sponsors courses and workshops specifically for international graduate students. *The Office of Disability Services and Programs*

http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html provides certification for students with disabilities and helps arrange the relevant accommodations. If an officially declared emergency makes travel to campus infeasible, *USC Emergency Information* <http://emergency.usc.edu/> will provide safety and other updates, including ways in which instruction will be continued by means of blackboard, teleconferencing, and other technology.

School of Architecture Attendance Policy

A student may miss the equivalent of one week of class sessions (in this case, **ONE, TWO, OR THREE (faculty, edit this as needed)** excused absences are permitted) without directly affecting the student's grade and ability to complete the course. An excused absence is a confirmed personal illness, family emergency, or religious holiday. For each absence over the allowed number, your grade can be lowered by 1/3-letter grade. If additional absences are required for a personal illness, family emergency, pre-approved academic reason/religious observance, you must discuss the situation with your faculty member immediately.

Any student not in class within the first 10 minutes is considered tardy, and any student absent (in any form including sleep, technological distraction, or by leaving mid class for a long bathroom/water break) for more than 1/3 of the class time can be considered fully absent. If arriving late, a student must be respectful of a class in session and do everything possible to minimize the disruption caused by a late arrival. It is always the student's responsibility to seek means (if possible) to make up work missed due to absences, not the instructor's, although such recourse is not always an option due to the nature of the material covered.

Sustainability Initiative

The School of Architecture has adopted the 2010 Initiative for Sustainability. Solutions to design problems must engage the environment in a way that dramatically reduces or eliminates the need for fossil fuel.