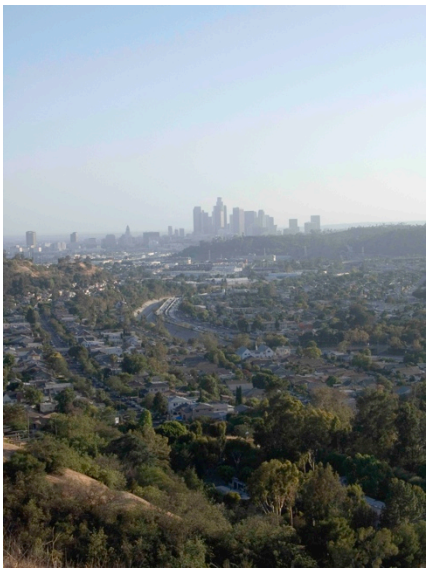
USC School of Architecture



Arch 447L
Ecological Factors in Design

Spring 2019 —Thursdays 4:00–6:50 P.M.

Location: Vivian Hall (VHE) 214

Instructor: Travis Longcore, Ph.D.

Office: Watt 331

Office Hours: Thursday, 2–3 P.M.

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Course Description

Lectures, laboratory exercises and field trips introduce basic knowledge of incorporating ecological factors in urban design and interaction of landscape science with the human environment.

The majority of humans now live in cities and that proportion is growing. As a result, the experience of the world and its ecological systems has changed significantly for most people, and the influence of human settlements on the natural environment has increased dramatically. Both of these consequences — the changed human experience of the world and our influence on it — depend on the design of cities at every scale. Design choices that are made at regional, municipal, local, and site scales affect the everyday experience for all species. The purpose of this course is to explore the ways in which the natural world interacts with cities, regions, and sites, and in turn how designs at these scales can incorporate the natural world into the urban environment in a way that maximizes environmental protection and enhances the human experience.

The course will concentrate on both the history and theory of urban ecological design and on the computing tools currently available to undertake quantitative (and usually spatial) analysis of the effects of alternative urban designs. In this sense, the course is situated both within landscape ecology and urban ecology and also in the applied disciplines of planning and architecture, and therefore is part of the newly identified domain of "geodesign."

Students in this course will undertake exercises to develop understanding of the course content, explore new tools inspired by curiosity, develop writing skills, and share the results with the world. That is, at least in part, students will be doing work that will be posted immediately to the Internet, in the form of writing, re-writing, and editing well-referenced and well-researched entries on the free encyclopedia Wikipedia. For a topic of such importance and full of innovation, an undergraduate learning experience can also contribute to the public good!

Learning Objectives

By the end of this course, students should be able to:

- Explain basic landscape ecology concepts linking natural and human systems;
- Articulate key terms and basic concepts of environmental performance in human-dominated landscapes;
- Access sources of primary scientific literature on environmental effects of urban design;
- Use environmental performance concepts to critically review and propose landscape designs in cities;
- Evaluate the available software tools and conceptual models available to provide feedback on alternative proposed urban designs;
- Communicate clearly to a general audience on a technical topic;
- Evaluate the quality and appropriateness of difference sources of technical information; and
- Work smoothly in a collaborative environment.

Recommended Preparation

All students with an interest in the topic are welcome in the class. It has no prerequisites. A background in Geographic Information Systems (GIS) would be helpful but is not required.

Required Readings

Marsh, William M. 2010. Landscape Planning: Environmental Applications, 5th Edition. John Wiley & Sons, New York. A digital version can be rented for 180 days for $47.50 through this link. Print copies are available used for about $30.

Description of Assignments

The course will require accessing and studying course materials before the class meeting time, then taking short quizzes and discussion of material during class. We will have two written assignments involving writing for the online encyclopedia Wikipedia. Each student will be responsible for exploring and developing an in-class demonstration of a software tool associated with incorporating ecological factors into design.

Weekly Reading Assessments and Discussion

Research on retention of reading material indicates that new information enters long-term memory fastest and most efficiently when the material is tested quickly and often. We will therefore have short quizzes on the reading material each week at the start of class, followed by discussions about the assigned materials.

Individual Writing Assignment

With the advent of the Internet, coursework no longer has to be useful only to the person learning the material. Rather it can become part of educating a wider audience about topics of broad interest. Therefore, the writing assignments will involve learning how to construct Wikipedia articles that meet the standards of verifiability and neutral point of view. The individual Wikipedia writing assignment is to write an article on a topic covered in the class that is not already adequately covered in Wikipedia.

Individual Tool Demonstration Assignment

Many tools, most of which are to some degree digital, are available to help designers and planners better integrate ecological information. For logistical reasons, we will concentrate on those tools that are low-cost or open source. Each student will be responsible for picking one of the many tools available, learning

its capabilities, and leading an in-class demonstration of the tool in which other students gain hands-on experience with the tool.

Final Paper

All students will write a term paper that demonstrates research and writing skills by reviewing and synthesizing current research on a topic pertaining to ecological factors in design. Topics might include: biomimicry, advances in urban forestry, emerging stormwater management techniques, performance of constructed wetlands, regional reviews of green infrastructure (e.g., Southeast Asia, Mediterranean), and sea level rise adaptation.

Course Schedule

	Topics/Readings	Deliverables
Week 1 1/10	**Landscape and Environmental Planning: Roots and Shoots** Marsh, Chapter 0, 1	Start Wikipedia student orientation Sign up on course page
Week 2 1/17	**Landscape Form, Slope and Aspect** Marsh, Chapter 3, 4	Quiz Complete Wikipedia orientation Presentation: **iTree Canopy**
Week 3 1/24	**Soils and Wastewater Disposal** Marsh, Chapter 5, 6	Quiz Leave Wikipedia comment on a page relevant to course List possible article topics on your user page
Week 4 1/31	**Groundwater** Marsh, Chapter 7	Quiz Add new info to a course-related Wikipedia page
Week 5 2/7	**Stormwater** Marsh, Chapter 8 **Campus BMP field trip**	Quiz Select project topic Post bibliography on talk page Presentation: **iTree Hydro; EPA Stormwater Calculator**
Week 6 2/14	No new reading	Wikipedia: 3-4 paragraph summary of article in sandbox
Week 7 2/21	**Watersheds** Marsh Chapter 9 **Streamflow, and Floods** Marsh, Chapter 10	Quiz Publish and expand article Presentation: **HEC suite, Bluebeam**
Week 8 2/28	**Water Quality** Marsh, Chapter 11	Quiz Expand article and select peer edit articles
Week 9 3/7	**South LA Wetlands Park Field Trip**	Leave comments on talk page for peer edit articles Copy-edit peer edit articles
Week 10 3/21	**Soil Erosion/BMPs** 12, 13	Quiz Make article revisions based on feedback Presentation: **Marxan/Zonation**
Week 11 3/28	**Riparian Landscapes** Chapter 14 **Coastal Zone Management**	Quiz Finalize individual article Presentation: **GeoPlanner**

	Chapter 15	
Week 12 4/4	**Sun, Shade** Chapter 16	Quiz Presentation: **CityEngine**
Week 13 4/11	**Urban Microclimates,** Ch. 17	Quiz Presentation: **GeoDesign Hub**
Week 14 4/18	**Vegetation and Land Use** Marsh, Chapter 19	
Week 15 4/25	**Landscape Ecology** Marsh, Chapter 20	Presentation: **iTree Landscape; NatureServ; GeoCAT**
Finals Week	**Final Exam (confirm date/time in SOC)**	

Grading

Grades will be assigned according to performance on the assessments as follows:

Weekly quizzes (30%) (lowest quiz score will be dropped)
Wikipedia article (15%)
Software demonstration (10%)
Final Paper (25%)
Final Exam (20%)

Letter grading

A	93.0–100 %
A–	90.0–92.9 %
B+	87.0–89.9 %
B	83.0–86.9 %
B–	80.0–82.9 %
C+	77.0–79.9 %
C	73.0–76.9 %
C–	70.0–72.9 %
D+	67.0–69.9 %
D	60.0–66.9 %
F	<600 %

Pass/Fail grading

Pass:	≥73.0 %
Fail:	<73.0 %

Assignment Submission Policy

All assignments will be submitted digitally and will be due according to the instructions provided for submission. Late work will be subject to a 10-point penalty per day.

Attendance Policy

The School of Architecture's general attendance policy is to allow a student to miss the equivalent of one week of class sessions (three classes if the course meets three times/week, etc.) without directly affecting the student's grade and ability to complete the course. If additional absences are required for a personal illness/family emergency, pre- approved academic reason/religious observance, the situation should be

discussed and evaluated with the faculty member and appropriate Chair on a case-by-case basis. For each absence over that allowed number, the student's letter grade will be lowered 1/3 of a letter grade (e.g., A to A–).

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 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.

Being absent on the day a project, quiz, paper or exam is due can lead to an "F" for that project, quiz, paper or exam or portfolio (unless the faculty concedes the reason is due to an excusable absence for personal illness/family emergency/religious observance). A mid term or final review is to be treated the same as a final exam as outlined and expected by the University.

Statement on Academic Conduct and Support Systems

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 Part B, Section 11, "Behavior Violating University Standards" policy.usc.edu/scampus-part-b. 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.

Support Systems

Student Counseling Services (SCS) – (213) 740-7711 – 24/7 on call
Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.
engemannshc.usc.edu/counseling

National Suicide Prevention Lifeline – 1 (800) 273-8255
Provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week. www.suicidepreventionlifeline.org

Relationship and Sexual Violence Prevention Services (RSVP) – (213) 740-4900 – 24/7 on call
Free and confidential therapy services, workshops, and training for situations related to gender-based harm. engemannshc.usc.edu/rsvp

Sexual Assault Resource Center
For more information about how to get help or help a survivor, rights, reporting options, and additional resources, visit the website: sarc.usc.edu

Office of Equity and Diversity (OED)/Title IX Compliance – (213) 740-5086
Works with faculty, staff, visitors, applicants, and students around issues of protected class.
equity.usc.edu

Bias Assessment Response and Support
Incidents of bias, hate crimes and microaggressions need to be reported allowing for appropriate investigation and response. studentaffairs.usc.edu/bias-assessment-response-support

The Office of Disability Services and Programs
Provides certification for students with disabilities and helps arrange relevant accommodations. dsp.usc.edu

Student Support and Advocacy – (213) 821-4710
Assists students and families in resolving complex issues adversely affecting their success as a student EX: personal, financial, and academic. studentaffairs.usc.edu/ssa

Diversity at USC
Information on events, programs and training, the Diversity Task Force (including representatives for each school), chronology, participation, and various resources for students. diversity.usc.edu

USC Emergency Information
Provides safety and other updates, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible. emergency.usc.edu

USC Department of Public Safety – UPC: (213) 740-4321 – HSC: (323) 442-1000 – 24-hour emergency or to report a crime.
Provides overall safety to USC community. dps.usc.edu