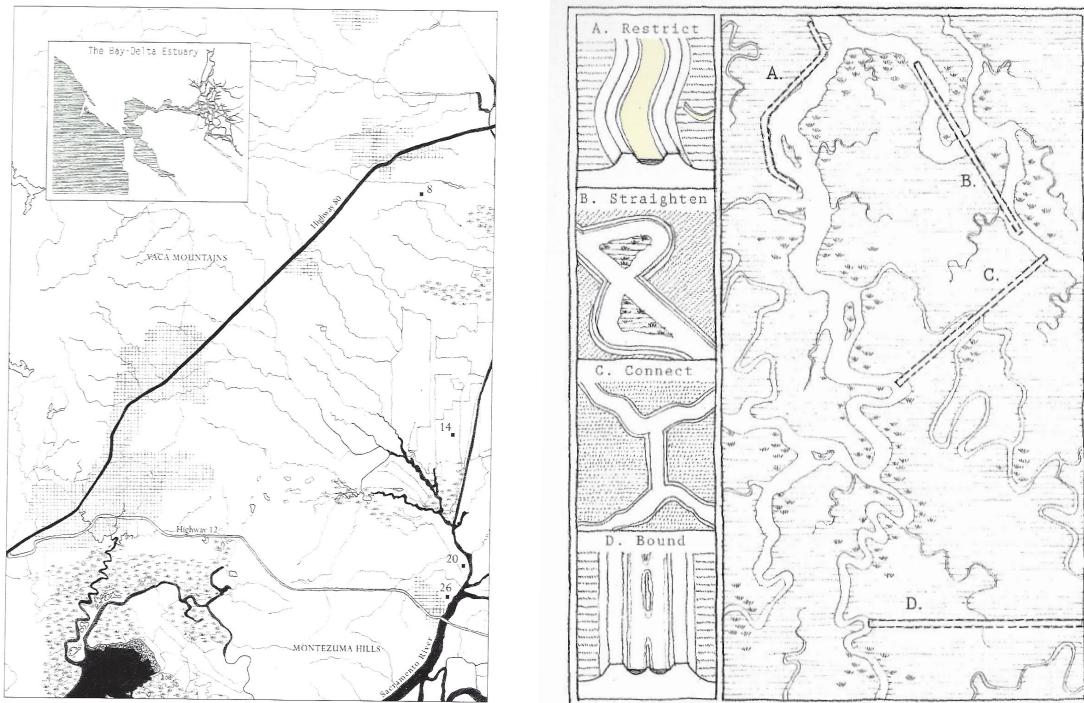


ECOLOGICAL PLANNING + DESIGN

Rhode Island School of Design

Emily Vogler + Jessica Leete

Spring 2015



Jane Wolff | Delta Primer

This course will introduce students to the ecological forces that shape a site from the regional to the site specific scale. By exploring the connections between ecological science, site analysis, and land-use planning we will investigate the role of landscape architecture in helping to navigate the interface between culture and nature. Through weekly lectures, in class workshops and field exercises, students will learn about a range of physical, biological and cultural site metrics that inform the design process. In the classroom, lectures will discuss bioregional landscape issues, site inventory techniques for hydrology, geology and plant communities, and integration and synthesis of site data into sustainable design solutions. In the field, students will learn about tools and techniques for gathering empirical site data such as vegetation transects, water and soil testing, and microclimate.

COURSE OBJECTIVES

- Develop an understanding of ecological systems and processes relevant to design,
- Develop an understanding of sites as part of bioregional systems,
- Develop methods for inventorying, recording and mapping site data,
- Develop skills to integrate and synthesize data into sustainable design solutions,
- Gain an overview of projects and practices that incorporate ecological thinking into design,
- Acquire technical GIS skills to help visualize and analyze spatial data,

READINGS

Readings will be assigned on each week's topic. Required readings must be read before the next class. Optional reading lists will be provided and students are strongly encouraged to choose one additional reading for each week.

SCHEDULE – (Topics, order and schedule subject to change)

2/16 WEEK 1 – INTRODUCTION: Region To Site

Required Readings:

- Pickett, Steward T. A. and Cadenasso, Mary L. *Urban Principles for Ecological Landscape Design and Management: Scientific Fundamentals. Cities and the Environment.*

Optional Readings:

- Burns, Carol J and Kahn, Andrea. *Site matters. Why Site Matters.* Routledge, NY. 2005.
- Girot, Christophe. *Four Trace Concepts in Landscape Architecture.* In *Recovering Landscapes.* Princeton Architectural Press. NY 1999.
- Cronon, William. "The Trouble with Wilderness; or, Getting Back to the Wrong Nature," in *Uncommon Ground: Rethinking the Human Place in Nature* (W.W. Norton& Co., 1996), 69-90.
- McHarg, Ian. *Design With Nature.* Sea Survival. Wiley Publishers, 1969.

2/23 WEEK 2 – VISUALIZING SPATIAL DATA 1

Required Readings:

- James Corner. 'Agency of Mapping' in *Mappings*, ed. Denis Cosgrove. Reaktion Books, 1999.

Optional Readings:

- Harley, J.B. *Maps, Knowledge and Power.* In *The Iconography of Landscape.* Ed. Denis Cosgrove and Stephan Daniels (p277-311).

Additional Books On Mapping + Visualization

- Tufte, Edward. *The Visual Display of Quantitative Information.* Graphics Press, 1992
- Hanna, Karen. *GIS for Landscape Architects.* ESRI Press, NY. 2002.
- Denis Cosgrove, ed. *Mappings*. Reaktion Books, 1999.
- Kate Ascher. *The Works: Anatomy of a City.* Penguin Books, 2005.

In Class Workshop: Vector GIS workshop: General introduction to GIS, map projections, where to find GIS data online, manipulating layers and properties, and exporting maps.

3/2 WEEK 3 – LANDSCAPE ECOLOGY : Matrix to patch

Required Readings:

- Forman, Richard. *Landscape Mosaics. Part 1 Landscapes and Regions.* Cambridge University Press. Cambridge, UK. 1996
- Way, Douglas. *Terrain Analysis. Chapter 1 Landforms and Aerial Photographic Terrain Analysis.* Dowden, Hutchinson & Ross Inc. Stroudsburg, Pennsylvania.

In Class Workshop: Using aerial photos and USGS maps to study landscape mosaic.

3/9 WEEK 4 – WATER : Watershed To Water Drop

Required Readings:

- Hill, Kristina. *Urban Design and Urban Water Ecosystems.* In *The Water Environment of Cities* edited by Lawrence A. Baker. Springer Science & Business Media, 2009.

In Class Workshop: Gather water samples from the Providence River to test water for temperature, salinity, dissolved Oxygen, nitrogen and phosphorous. Water Samples brought back to the Lab to look at plankton under the microscopes.

3/16 WEEK 5 – TERRAIN: Soil Suitability to Phytoremediation

Required Readings:

- *Soil Taxonomy: A basic System of Soil Classification for Making and Interpreting Soil Surveys,* USDA
- *Urban Soil Primer, URCS*
- Way, Douglas. *Terrain Analysis, Chapters on Fluvial, Glacial and Glacial Fluvial Landforms*

Visiting Lecture: Kate Keenan from Offshoots to present her work and research on Phytoremediation

3/23 WEEK 6 - SPRING BREAK

3/30 WEEK 7 – IN CLASS REVIEW OF PROGRESS ON CASE STUDY

4/6 WEEK 8 – CASE STUDY PRESENTATIONS

4/13 WEEK 9 – VISUALIZING SPATIAL DATA 2

In Class Workshop: Raster GIS workshop: General introduction to Raster data and DEM files, 3D analyst tools, Topo analysis including hillshade, slope and aspect, and basics of reclassifying data and map algebra.

4/20 WEEK 10 – BIODIVERSITY: Migration Corridors To Pollinators

Required Readings:

- Hill, Kristina. Biodiversity and Climate in Cities. In Designing Wildlife Habitats. Ed. John Beardsley. Dumbarton Oaks. 2013.
- Del Tredici, Peter. Spontaneous Urban Vegetation. *Nature and Culture* 5(3), Winter 2010: 299–315

4/27 WEEK 11 – IN CLASS REVIEW OF PROGRESS ON HABITAT STUDY

5/4 WEEK 12 - LANDSCAPE PERFORMANCE : Ecosystem Services to Site Metrics

Required Readings:

- Steven Windhager, Frederick Steiner, Mark T. Simmons and David Heymann, "Toward Ecosystem Services as a Basis for Design," *Landscape Journal* 29 (2010): 2-10.
- Renee Kaufman. "Uncertainty And Anxiety," in Scenario 2: Performance. <http://scenariojournal.com/article/uncertainty-and-anxiety/>. 2012

Optional Readings:

- Robert Costanza, Ralph d'Arge, Rudolf de Groot, Stephen Farber, Monica Grasso, Bruce Hannon, Karin Limburg et al., "The value of the world's ecosystem services and natural capital." *Nature* 387: 253-260. 1997
- Stephanie Carlisle and Nicholas Pevzner. " Introduction: Performance" in Scenario 2: Performance. <http://scenariojournal.com/article/letter-from-editors>. 2012

Visiting Lecture: Arianna Koudounas from the Landscape Architecture Foundation

5/11 WEEK 13 – SITE MONITORING: Measuring Change over Time

Required Readings:

- Carlisle, Bruce & Carullo, Marc. Rapid method for Assessing Estuarine Marshes in New England. Massachusetts Office of Coastal Zone Management. 2006

In Class Workshop:

- Site monitoring workshop at salt marsh near Providence. Introduction to vegetation transects to calculate percent cover of species.

CLASS POLICY

All RISD academic policy for this course is outlined in detail in the course catalogue for the 2014-15. Please review the catalogue carefully to understand the institutional policies. Students should refer to the policies defining academic standing, academic dishonesty and all academic conduct that are outlined in the Course Announcement Catalogue.

ATTENDANCE

A student who misses the first class meeting of the term may be removed from the course. A student who misses any two classes over the course of the term may be removed from the class. The student is dropped from the course and given a grade W or F depending on the circumstance. Each lateness and unexcused absence will result in a reduction in the overall GPA for the course. Scheduled appointments and professional interviews will not be accepted as excused absences. Students must notify faculty of any excused absences in advance or as soon as possible on the say of their absence. Faculty contact information is located at the top of the course syllabus. RISD affirms the right of students to observe significant religious holy days. Students should inform their instructor on the first day of class/studio of such circumstances if class attendance will be affected.

Students who are unable to fulfil the requirements of the course or course schedule should consult with the course instructor before or in the first week of class to develop alternative strategies for successfully moving through the class. If at any time in the semester, medical or personal problems arise that begin to affect a student's ability to attend class or complete work, they are encouraged to speak with their faculty as soon as possible to discuss their options for completing the course successfully.

CELL PHONE, SOCIAL MEDIA, AND INTERNET

Cell phones and PDA devices **must be turned off or set to silence during class**. Students who use their cell phone for translation services must advise their faculty of that need at the beginning of class. Computers shall be utilized for course sanctioned research and requirements during class hours.

BASIS FOR EVALUATION OF STUDENT PERFORMANCE

Student performance will be evaluated on evidence of competency in the conceptual and technical content of the course. Midterm evaluations will assess progress. Any students performing below the requirements for a B in the course will be given a warning at that time and must meet with their faculty to discuss ways to improve their standing. Final evaluation is assessed on attendance, participation, weekly progress in the development of the craft and quality of the work, and timely completion of the work. Assignments must be turned in on schedule. Failure to meet deadline will result in a grade reduction. Each day the work misses a deadline will result in a .5 grade reduction.

GRADING CRITERIA

60% Assignments
20% Quizzes and Exams
20% Participation

Students who fulfil course requirements in a manner that displays competent conceptual and technical mastery of the course content as described above will receive a B. Work that exceeds or fall short of that standard will be graded accordingly. A grade of B- indicates need for improvement. A grade below B- is a probationary grade.

GRADING SCALE

- A Superior/Excellent performance; showing exceptional progress and effort, work quality, consistent experimentation, rigorous work process, significant contribution to others, and a mastery of the subject matter.
- B Satisfactory performance; showing progress and effort and general comprehension of the subject matter.
- C Probationary-Graduate students must have a B average by their final semester in order to graduate.
- D Minimal course requirements unmet. Failing Grade
- F Minimal course requirements unmet. Failing Grade

DOCUMENTATION

All original drawings must be retained and submitted at the end of the course. All work should be stored flat in a dedicated portfolio case. It is recommended that the scanning of drawings happen frequently during the semester rather than at one time. A CD of all course work must be submitted to the department office before 1pm on Friday, MAY 22, 2015. Failure to submit proper documentation of work will result in an incomplete grade for the course.