

# URPL 841: Planning for the Ecological City

Spring 2017

University of Wisconsin – Madison  
Department of Urban and Regional Planning

**Instructor:** Aslı Göçmen, Associate Professor, Urban and Regional Planning  
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**Meeting time** Mondays 9:30 – 10:45 am, 212 Old Music Hall  
**& place:** Wednesdays 9:30 am – 12:00 pm, 109 Old Music Hall

**Office hours:** Mondays 11:00 am – 12:00 pm & Wednesdays 12:30 pm – 1:30 pm

**Pre-requisite:** Introductory GIS

## Course Overview

Human interactions, land use regulations, and fragmented planning structures have frequently led to land developments that are not in tune with nature. Such development patterns have negatively impacted the environment by, for instance, fragmenting and destroying habitats, reducing farmland, and increasing air and water pollution. These impacts have manifested themselves on both the local and the global scale. Effective planning can help minimize disruption of the ecological processes caused by land development, and consequently, there is a critical role for planners.

This class is designed to familiarize students with ecological processes, strategies for “designing with nature,” planning responses to environmental problems in the United States, and geospatial environmental data and tools in order to analyze issues related to ecological land development.

## Course objectives

This course intends to give students a theoretical and an analytical background on ecological planning and to introduce them to the practice of environmental planning and management in the United States. It aims to provide students with the knowledge, skills, and values appropriate to environmental planning. More specifically, these knowledge, skills and values include the following:

Planning knowledge: As an outcome of this course, students are expected to develop a better understanding of ecological processes, and of policies and practices of environmental planning in local, regional, and federal levels. Furthermore, students are expected to be able to analyze and envision ways we can design with nature and assess land development patterns for environmental performance.

Planning skills: As an outcome of this course, students are expected to be able to obtain and analyze geospatial environmental data using a range of spatial analysis tools for a number of environmental planning practices. More specifically, students will learn how to conduct a land suitability analysis, examine the impacts of imperviousness on water resources, and investigate the impacts of development on land resources. In addition, the students will further their written, oral, and graphic communication skills.

Planning values and ethics: As an outcome of this course, students will develop an appreciation of natural resource and pollution control factors in planning, and understanding of how to create sustainable futures.

### **Course requirements and format**

We will meet twice a week. Monday meetings are designed as seminars. For a seminar format to be successful, full participation of all members is required. Thus, the students are expected to attend all the sessions, be prepared to discuss assigned material, and show respect for and interest in the opinions of others. We will discuss assigned readings, but you are encouraged to do further research, suggest other readings, and bring other material to class. During most of our Monday meetings, we will have presentations given by an individual student. Wednesday meetings are generally designated for analyzing geospatial environmental data. We will cover a range of tools for analyzing environmental data. The students are expected to complete four lab assignments. We will also have field visits and may use Wednesday meetings for additional discussion / presentation time. The final requirement of the course is a term paper. Details about each requirement can be found below.

Course participation refers to all aspects of participation: attendance, and particularly the quality and quantity aspects of participating in discussions. While most of these discussions will take place in our lecture sessions, they may not be restricted to the lectures alone, but could take place in the lab sessions and through learn@UW. If you miss class, it is your responsibility to find out (from fellow classmates) what you missed.

Presentation refers to an individual effort to prepare and discuss a particular week's topic. The primary aim of the presentation is to provide an overview of the main and important concepts to be covered related to the topic of the week. Furthermore, the presenters are expected to provide additional information beyond what is already covered in our assigned readings. This information could be about topic related-issues in our city, region, or state; developments or interesting cases in the field; and additional reading material (to be provided ahead of time). I will be available and eager to work with each student during the week prior to the scheduled presentation. Students should aim to present on the topic for about 45 minutes. Each student will take one turn during the semester and will be assigned a different topic to present. I encourage you to sign up for a topic as soon as possible, as if you wait, it may not be possible for you to present on a topic of your choice. Please remember that it is the student's responsibility to make sure that any needed equipment will be available and set in our classroom.

Term paper: The aim of the term paper is to examine an ecological planning issue. The issue could be practice, policy, or analysis related. There is flexibility in the topic you choose; however, both you as the student and I as the instructor need to agree upon it. You are not required to use GIS for this paper. Based on the issue you examine, there may be different approaches in preparing this paper. For some topics, you may need to do an extensive literature review and not go out in the field. For others, you may need to observe agencies or conduct interviews. In some cases, you may need to combine different methods.

The final paper should be 12-15 double-spaced pages with appropriate and proper citations. The term paper update, which is due on March 29th, should be around two pages including an abstract of around 250 words and an expanded outline. Further information on the term paper will be provided later in the term.

Lab assignments: The students are expected to complete three lab assignments emphasizing spatial analysis techniques used in a range of environmental planning applications and another one reflecting on environmental geospatial tools and our field visits. You will have at least one week to complete the

assignments. You can expect to complete the majority of an assignment work during regular lab time. Please remember that while you may discuss the preparation of your assignment with fellow students, you need to work on them individually.

### **Grading and evaluation**

The students will be evaluated on the above four types of activities and their grades will be based on the following: course participation - 15%; presentation - 15%; term paper – 30%; and lab assignments - 40%.

Final grades are assigned based on the following scale: 93-100 – **A**; 88-92 – **AB**; 83-87 – **B**; 78-82 – **BC**; 70-77 – **C**, 60-69 – **D**; and 0-59 – **F**.

Please note that:

- The participation grade will involve both the quality and quantity of your participation and attendance. Attending all classes but not speaking up will result in the loss of many points.
- The lab assignments will be evaluated based on both correct findings as well as a thorough and meaningful discussion of the findings. Note that there may be other expectations in the assignments.
- Late submissions of lab assignments will be penalized by one point each day that it is late; no late assignments will be accepted after they have been graded and returned to students.
- The term paper will be evaluated based on the research (e.g., development of the research question, depth of research, appropriate and sound research methods) and writing (e.g., how well the paper is organized, how clear the arguments are developed, use of appropriate grammar) aspects.
- The term paper update will be 10 percent of the final paper grade.
- The term paper is due May 10<sup>th</sup>; please note that no late submissions will be accepted.

### **Academic Integrity**

I expect high academic integrity from each student. It is assumed that students are familiar with the policies, definitions, and procedures regarding academic misconduct, as specified in UWS 14. Details of the policies, including your rights and responsibilities can be found at:

<https://students.wisc.edu/pdf/UWS-14%20Policy%20&%20Procedures.pdf>

Under the policies regarding academic misconduct, an instructor has discretion as to which penalties will be imposed in the case of academic misconduct. I reserve the right to assign a failing grade to a particular assignment, report the incidence to the Student Advocacy and Judicial Affairs office within the Dean of Students Office, or impose other penalties.

Please remember that using another person's ideas, words, or research and presenting it as one's own by not properly crediting the originator (including the Web) and cheating are two common acts of academic misconduct.

### **Civility in the Classroom**

It is a requirement of this class that you respect your classmates (especially those that are presenting) and instructor, and that you not engage in non-class e-activities (e.g., checking and responding to e-mail, texting, checking Facebook and Twitter) during our meetings. Engagement in non-class e-activities is rude to both your classmates and your instructor, is a disruption for your instructor and other presenters, and is an impediment to your processing and retaining class-related information. I reserve to right to ask you to leave the classroom and give a penalty on your participation grade if you engage in non-class e-activities.

## Special Accommodations

If you have a disability or conflict with our course schedule that I need to be aware of, please notify me and, if necessary, provide proof of it within the first two weeks of class.

## Course Material

Required text (available at the College Library Reserves)

Randolph, John. 2012 (2<sup>nd</sup> ed.). *Environmental Land Use Planning and Management*. Washington, DC: Island Press.

Suggested text:

Daniels, Tom. 2014. *The Environmental Planning Handbook for Sustainable Communities and Regions*. Chicago, IL: American Planning Association Press

Douglas, Ian and Philip James. 2015. *Urban Ecology: An Introduction*. Abingdon, UK: Routledge.

Hough, Michael. 2004 (2<sup>nd</sup> ed.). *Cities and Natural Process: A Basis for Sustainability*. London, U.K.: Routledge.

Marsh, William M. 2010. (5<sup>th</sup> ed.). *Landscape Planning: Environmental Applications*. Hoboken, NJ: John Wiley & Sons.

McHarg, Ian L. 1995 (25<sup>th</sup> year ed.). *Design with Nature*. Hoboken, NJ: John Wiley & Sons.

Platt, Rutherford H., Rowntree, Rowan A., and Pamela C. Muick (ed.). 1994. *The Ecological City: Preserving and Restoring Urban Biodiversity*. Amherst: The University of Massachusetts Press.

## Course Schedule

Please note that the schedule and readings are subject to minor changes as we progress in the term.

### *Introduction*

#### Week 1 – January 16

Lab: Review of syllabus and GIS fundamentals

Reading: <http://www.wisc.edu/writing/Handbook/QuotingSources.html>

#### Week 2 – January 23

Lecture: Overview of urban ecology, ecological planning, environmental planning and management

Readings: Alberti, M. 2005. The Effects of Urban Patterns and Ecosystem Function. *International Regional Science Review*. 28(2): 168-192.

Daniels, T. 2009. A Trail Across Time: American Environmental Planning from City Beautiful to Sustainability. *Journal of the American Planning Association*. 75(2): 178-192.

Hough, Chapter 1

Randolph, Chapters 1, 2 & 3

Lab: Review of ArcGIS Spatial Analyst Extension

## *Designing with Nature*

### Week 3 – January 30

Lecture: Soils, topography, and urban agriculture

Readings: Cohen, N. 2007. The Suburban Farm: An Innovative Model for Civic Agriculture. *UA Magazine*. December: 55-58.

Haines, A. 2012. Planning and Zoning for “Frac Sand” Mining. *Land Use Tracker*. 11(4): 1-5.

Hough, Chapter 5

Randolph, Chapter 6

(Suggested) Loh, C. G. & Osland, A. C. 2016. Local Land Use Planning Responses to Hydraulic Fracturing. *Journal of the American Planning Association*. 82 (3): 222-235.

Lab: Land suitability analysis

### Week 4 – February 6

Lecture: Water resources

Readings: Arnold, C. L., Jr., and J. C. Gibbons. 1996. Impervious surface coverage: The emergence of a key environmental indicator. *Journal of the American Planning Association* 62 (2): 243-58.

Brabec, Elizabeth, Shulte, Stacey, and Paul L. Richards. 2002. Impervious Surfaces and Water Quality: A Review of Current Literature and Its Implications for Watershed Planning. *Journal of Planning Literature*. 16(4): 499-514.

Randolph, Chapters 7, 8, 9 (skim through the techniques)

(Suggested) Schueler, T. 1994. The Importance of Imperviousness. *Watershed Protection Techniques*. 1(3): 100-111.

Lab: Land suitability analysis exercise continued

### Week 5 – February 13

Lecture: Plants and urban forestry

Readings: Radeloff, V. C., Hammer, R. B. and S. I. Stewart. 2005. Rural and Suburban Sprawl in the U.S. Midwest from 1940 and 2000 and its Relation to Forest Fragmentation. *Conservation Biology*. 19(3): 793-805.

Randolph, Chapter 10

Young, R. 2011. Planting the Living City. *Journal of the American Planning Association*. 77(4): 368-381.

Lab: Land suitability analysis exercise continued

Due: Land suitability analysis assignment

### Week 6 – February 20

Lecture: Wildlife

Readings: Maestas, J. D., Knight, R. L., and W. C. Gilbert. 2003. Biodiversity Across a Rural Land-Use Gradient. *Conservation Biology*. 17(5): 1425-1434

Odell, E., Theobald, D., and R. Knight. 2003. Incorporating Ecology into Land Use Planning: The Songbirds Case for Clustered Development. *Journal of the American Planning Association*. 69(1): 72-82

Randolph, Chapter 11

Lab: Land cover analysis

### Week 7 – February 27

Lecture: Energy and air quality

Readings: Davis, A., Rogers, J., and P. Frumhoff. 2008. Putting Wind to Work: The Challenges of Balancing Conservation, Climate Change, and Local Siting Issues. *Planning*. October: 36-41.

Ewing, R. and F. Rong. 2008. The Impact of Urban Form on U.S. Residential Energy Use. *Housing Policy Debate*. 19(1): 1-30.

Frank, L. D., Kavage, S., and B. Appleyard. 2007. The Urban Form and Climate Change Gamble. *Planning*. August/September: 18-23.

Randolph, chapter 12

Stone, B., Mednick, A., Holloway, T., and S. N. Spak. 2007. Is Compact Growth Good for Air Quality? *Journal of the American Planning Association*. 73(4): 404-418.

Stone, B. and M. Rodgers. 2001. Urban Form and Thermal Efficiency: How the Design of Cities Influences the Urban Heat Island Effect. *Journal of the American Planning Association*. 67(2): 186-198.

Winkelman, S. 2007. Comment on Stone: Could the Worst of Times for the Planet Be the Best Times for Planning? *Journal of the American Planning Association*. 73(4): 418-420.

Lab: Landscape ecology-based analysis (Landscape metrics)

### *Overview*

### Week 9 – March 6

Lecture: Two poles? “urban within nature” & “nature within urban”

Readings: Echenique, M. H., Hargreaves, A. J., Mitchell, G. and A. Namdeo. 2012. Growing Cities Sustainably, *Journal of the American Planning Association*, 78(2): 121-137.

Gocmen, Z. A. 2009. Relationships between Residential Development and the Environment: Examining Resident Perspectives. *Journal of Planning Education and Research*, 29(1): 54-66.

Owen, D. 2004. Green Manhattan: Everywhere Should be More Like New York. *The New Yorker*.

Rees, W. and M. Wackernagel. 1996. Urban Ecological Footprints: Why Cities Cannot Be Sustainable – and Why They are a Key to Sustainability. *Environmental Impact Assessment Review*. 16: 223-248.

See other information on ecological footprint at:

[http://www.footprintnetwork.org/gfn\\_sub.php?content=footprint\\_overview](http://www.footprintnetwork.org/gfn_sub.php?content=footprint_overview)

Randolph, chapter 16

Lab: Landscape metrics continued

## *Environmental Planning and Management*

### Week 10 – March 13

Lecture: Land Conservation

Readings: Daniels, T. and M. Lapping. 2005. Land Preservation: An Essential Ingredient in Smart Growth. *Journal of Planning Literature*. 19(3): 316-329.

Lynch, A. J. 2016. Is It Good to Be Green? Assessing the Ecological Results of County Green Infrastructure Planning. *Journal of Planning Education and Research*. 36(1): 90-104.

Randolph, Chapter 15

Lab: Impervious surface analysis (Impervious Surfaces Analysis Tool)

Due: Environmental resources and landscape patterns exercise

*Week of March 20 is Spring Break -- No lecture or lab this week*

### Week 10 – March 27

Lecture: Planning for Climate Change

Readings: Bassett, E. and V. Shandas. 2010. Innovation and Climate Action Planning, *Journal of the American Planning Association*. 76(4): 435-450. (please note that all articles in this issue might be of interest to you)

Butler, W. H., Deyle, R. E., and C. Mutnansky. 2016. Low-regrets Incrementalism: Land Use Planning Adaptation to Accelerating Sea Level Rise in Florida's Coastal Communities. *Journal of Planning Education and Research*. 36(3): 319-332.

Drummond, W. 2010. Statehouse versus Greenhouse. *Journal of the American Planning Association*. 76(4): 413-433.

Hamin, E. M., Gurrán, N. and A. M. Emlinger. 2014. Barriers to Municipal Climate Adaptation: Examples from Coastal Massachusetts' Smaller Cities and Towns. *Journal of the American Planning Association*. 80(2): 11-122.

Randolph, review Chapter 12 (pp. 412-442)

Stone, B., Vargo, J., and D. Habeeb. 2012. Managing Climate Change in Cities: Will Climate Action Plans Work? *Landscape and Urban Planning*. 107: 263-271.

Lab: Impervious surface and water quality analysis for Wisconsin

Due: Term paper update

### Week 11 – April 3

Lecture: Natural Hazard Mitigation

Readings: Berke, P. R., Song, Y. and M. Stevens. 2009. Integrating Hazard Mitigation into New Urban and Conventional Developments. *Journal of Planning Education and Research* 28: 441-455.

Randolph, Chapter 13

Lab: Impervious surface and water quality analysis for Wisconsin

### Week 12 – April 10

- Lecture: Ecosystem and Watershed Management  
Readings: Platt, R. H. Urban Watershed Management: Sustainability, One Stream at a Time. *Environment*. 48(4): 26-42.  
Randolph Chapter 19  
Lab: Field visit to Epic Systems Campus

### Week 13 – April 17

- Lecture: Growth Management  
Readings: Lewis, R., Knaap, G-J, and J. Sohn. 2009. Managing Growth with Priority Funding Areas: A Good Idea Whose Time Has Yet to Come. *Journal of the American Planning Association*. 75(4): 457-478.  
Randolph, Chapters 17 & 18  
Lab: Field visit to Troy Gardens & Community Farm  
Due: Impervious surface analysis assignment

### ***Smart Growth?***

### Week 14 – April 24

- Lecture: Smart growth movement, New Urbanist developments, open space conservation subdivisions  
Readings: Berke, P R., MacDonald, J., White, N., Holmes, M., Line, D., Oury, K., and R. Ryznar. 2003. Greening Development to Protect Watersheds: Does New Urbanism Make a Difference? *Journal of the American Planning Association*. 69(4): 397-413.  
Garde, A. M. 2009. Sustainable by Design? Insights from U.S. LEED-ND Pilot Projects. *Journal of the American Planning Association*. 75(4): 424-440.  
Garde, A. M. 2004. New Urbanism as Sustainable Growth? A Supply Side Story and Its Implications for Public Policy. *Journal of Planning Education and Research*. 24: 154-170.  
Gocmen, Z. A. 2014. Assessing the Environmental Merits of the Conservation Subdivision Design. *Journal of Planning Education and Research*. 34(2): 203-220.  
Thompson, R. H. 2004. Overcoming Barriers to Ecologically Sensitive Land Management: Conservation Subdivisions, Green Developments, and the Development of a Land Ethic. *Journal of Planning Education and Research*. 24: 141-153.  
Ye, L., Mandpe, S., and P. B. Meyer. 2005. What is “Smart Growth?” – Really? *Journal of Planning Literature*. 19: 301-315.  
Lab: Assessment based on sustainability-based certification programs

### Week 15 – May 1

- Lecture: Future directions and course wrap-up  
Readings: Alberti, M. 1999. Urban Patterns and Environmental Performance: What Do We Know? *Journal of Planning Education and Research*. 19: 151-163.  
Beatley, T. 2009. Sustainability 3.0: Building Tomorrow’s Earth Friendly Communities. *Planning*. May 17–22.



- Berke, P. R. 2008. The Evolution of Green Community Planning, Scholarship, and Practice: An Introduction to the Special Issue. *Journal of the American Planning Association*. 74(4): 393-407. (please note that all articles in this issue might be of interest to you)
- Larco, N. 2016. Sustainable Urban Design – A (Draft) Framework. *Journal of Urban Design*. 21(1): 1-29.
- Spirn, A. W. 2014. Ecological Urbanism: A Framework for the Design of Resilient Cities. Reprinted in Ndubisi, F. O. (ed.) 2014. *The Ecological Design and Planning Reader*. pp. 557-571. Washington, DC: Island Press.
- Steiner, F. 2011. Landscape Ecological Urbanism: Origins and Trajectories. Reprinted in Ndubisi, F. O. (ed.) 2014. *The Ecological Design and Planning Reader*. pp. 533-540. Washington, DC: Island Press.
- Wu, J. and T. Wu. 2013. Ecological Resilience as a Foundation for Urban Design and Sustainability. Reprinted in Ndubisi, F. O. (ed.) 2014. *The Ecological Design and Planning Reader*. pp. 541-556. Washington, DC: Island Press.

Lab: Geospatial tools for sea level rise and assessing community forests

Due: Reflections on field visits, sustainability-based certification programs and environmental geospatial tools.

#### Week 16 – May 8

\* Term papers are due Wednesday, May 10<sup>th</sup> at 5 p.m.