

**GEOG 4215/5215 Urban Ecology**  
Spring 2021

**Lectures:** MWF, 10:10 am - 11:00 am

**Location:** Online on CANVAS

**Credits:** 3

**Instructor:** Dr. Sara Gagné

**E-mail:** sgagne@uncc.edu

**Office hours:** Mondays, 1:30 pm - 3:30 pm, or by appointment.

*Please use your UNCC e-mail address to contact me. I will not respond to e-mails from other addresses.*

**Teaching assistant:** Jennifer Bates

**E-mail:** jbates11@uncc.edu

**Office hours:** Wednesdays, 12-1 pm (contact Jennifer beforehand to let her know you'd like to meet)

**Introduction**

Many of us live in cities. In fact, according to the United Nations, 82% of Americans and, for the first time in recorded history, more than half of the global human population now live in urban areas. Traditionally, we have viewed cities simply as our living spaces, designed by and for us and separate from the natural world. Recently, a new way of thinking about cities has emerged and is forming the basis of the emerging field of urban ecology. Urban ecologists consider cities and urban places as urban ecosystems made up of biogeophysical and socioeconomic components of which humans are but one part. Urban ecologists are increasingly aware that we not only influence the biogeophysical aspects of our cities but that those aspects, in turn, influence and shape *us*.

Cities are the nexus of the major environmental, social and economic issues facing humanity today. Cities produce 75% of the carbon dioxide we emit into the atmosphere. The conversion of tropical rainforest to crops and pastures for grazing cattle is driven by the appetites of city dwellers. One third of the global urban population lives in slums. Obviously, the way we have built and managed cities in the past is not working. We need to improve our understanding of cities and how they function in order to create sustainable urban ecosystems.

**The aims of this course are to:**

- Explore the structure and functioning of urban ecosystems
- Compare Charlotte's structure and functioning to that of other cities around the world
- Analyze the concept of sustainability as it relates to cities

**As we work towards these aims, you will develop the skills necessary to:**

- Question established knowledge and ways of doing things
- Create new knowledge and propose solutions to the social, environmental and economic issues facing your own community
- Express your ideas clearly and intelligently to diverse audiences

## Assessment

- Pre-discussion summaries and critiques **25%**
- Citizen science poster **10%**
- Urban Heat Island presentation **10%**
- Ecosystem services position statement **20% (5% for outline)**
- Final paper **35% (5% for abstract)**

**Graduate students:** The assessment above will constitute 70% of your grade for the class. The remaining 30% will come from a 20-minute review presentation on a topic of your choosing but not covered in the course.

### *Grading scheme - undergraduate*

A	90-100%	Excellent
B	80-89%	Good
C	70-79%	Fair
D	60-69%	Passing
F	<60%	Failing

### *Grading scheme - graduate*

A	90-100%	Commendable
B	80-89%	Satisfactory
C	70-79%	Marginal
U	<70%	Unsatisfactory

## **Pre-discussion summaries and critiques:**

Pre-discussion summaries and critiques are intended to help structure your critical analysis of the reading and to help prepare you for the upcoming discussion.

Prior to each discussion, you are expected to submit: (1) an abstract-like summary of the reading (at least 300 words) that describes the elements of the reading (see below), (2) the single most important take-home message from the reading, (3) three critiques of the reading that you will use as the basis for your comments during the discussion, and (4) a question you have about the reading that you want answered during the discussion.

Submit all four items in one document at the end of each discussion. The summary of the reading should be in paragraph form whereas items 2-4 can be in bullet form.

For conceptual articles, i.e., those not describing original research, the summary should describe:

- the need for article or the importance of the topic covered,
- the thesis of the article, i.e., the major point the author(s) is trying to get across,
- the major concepts described in the article; these should be explained so that they are understood by the class, and
- the article's conclusions or take-home messages.

For original research articles, the summary should describe:

- the research objective(s), goal(s), and/or question(s),
- the need for the research or its importance according to the author(s),

- the methods used to address the research objective(s)/goal(s)/question(s),
- the major results with reference to at least one table or figure; the figure or table should be explained to the class,
- the author(s)' explanation or interpretation of the results in the Discussion section, and
- the conclusions or take-home messages.

### **Late policy**

Deadlines for submission of work are clearly indicated in this syllabus. Late submissions will be accepted and graded according to the following schedule: work submitted up to 24 hours after the deadline will receive a 25% penalty; work submitted between 24 and 48 hours after the deadline will receive a 50% penalty; and work submitted more than 48 hours after the deadline will not be accepted.

### **UNC Charlotte Code of Student Responsibility**

You are expected to observe the UNC Charlotte Code of Student Responsibility (see <http://legal.uncc.edu/policies/up-406>).

### **UNC Charlotte Code of Student Academic Integrity**

You are expected to observe the UNC Charlotte Code of Student Academic Integrity (see <http://legal.uncc.edu/policies/up-407>). The Code prohibits cheating, the fabrication and falsification of information, multiple submission of the same work for credit, plagiarism, the abuse of academic materials, and complicity in academic dishonesty.

**If you are unclear as to what constitutes a violation of the Code, please see the TA or me during office hours.**

### **Students with disabilities**

If you have a disability for which you wish to receive academic accommodations, please provide me with a letter of accommodation from the Office of Disability Services at the beginning of the semester. For more information about disability services go to <http://ds.uncc.edu/>.

### **Class recordings**

Class sessions will all be audio- and/or video-recorded for the purposes of student-participant reference and access by other students enrolled in the same course (including students enrolled in different class sections or break-out groups). Student consent to being recorded during class is a condition of class participation. If you do not consent to being recorded during class, you will need to deactivate your video camera, keep your mute button activated, and participate only via the chat feature, but please note that such actions may have a negative impact on any portion of your grade that is based on class participation. Students are not permitted to make their own recordings of class sessions or to share or distribute University recordings of class sessions. NOTE: Students with specific electronic recording accommodations authorized by the Office of Disability Services may record classes; however, the instructor must be notified of any such accommodation prior to recording. Any distribution of such recordings is prohibited.

Electronic video, image capture, and/or audio recording is not permitted during class, whether conducted in person or online, unless the student obtains permission from the instructor. If permission is granted, any distribution of the recording is prohibited. Students with specific electronic recording accommodations authorized by the Office of Disability Services do not require instructor permission; however, the instructor must be notified of any such accommodation prior to recording. Any distribution of such recordings is prohibited.

**LECTURE SCHEDULE (subject to change)**

<b>Week</b>	<b>Date</b>	<b>Topic/Activity</b>
<b>Introduction</b>		
1	Jan 20	Introduction to course What is Urban Ecology?
	Jan 22	Planet Earth II: Cities
2	Jan 25	What is urban ecology?
	Jan 27	What is urban ecology?
	Jan 29	<b>Discussion: Weng (2007)</b>
<b>The Urban Ecosystem Part I: Geophysical components</b>		
3	Feb 1	The carbon and nitrogen cycles in the city
	Feb 3	The carbon and nitrogen cycles in the city
	Feb 5	<b>Discussion: Warren-Rhodes &amp; Koenig (2001)</b>
4	Feb 8-12	SPRING BREAK – NO CLASSES
5	Feb 15	DR. GAGNÉ @ WORKSHOP – NO CLASS
	Feb 17	DR. GAGNÉ @ WORKSHOP – NO CLASS
	Feb 19	Urban heat islands
6	Feb 22	Urban heat islands Group research for UHI presentation
	Feb 24	Group research for UHI presentation
	Feb 26	<b>UHI presentations</b>
7	Mar 1	<b>UHI presentations</b>
<b>The Urban Ecosystem Part II: Biological components</b>		
	Mar 3	Individual species and urbanization
	Mar 5	Individual species and urbanization
8	Mar 8	Individual species and urbanization/ Species diversity & invasive species
	Mar 10	Species diversity & invasive species
	Mar 12	<b>Discussion: Anderson et al. (2014)</b> <b>Graduate student presentation topic due</b> <b>Final paper abstract due</b>
9	Mar 15	Species diversity & invasive species
	Mar 17	Ecosystem services How to write a persuasive paragraph
<b>The Urban Ecosystem Part III: Socioeconomic components</b>		
	Mar 19	Ecosystem services Citizen science poster project
10	Mar 22	Group research for ecosystem services debate <b>Ecosystem services outline due</b>
	Mar 24	BREAK – NO CLASS
	Mar 26	BREAK – NO CLASS
11	Mar 29	<b>Ecosystem services debate</b> <b>Position statement due</b>
	Mar 31	<b>Ecosystem services debate</b> <b>Position statement due</b>
	Apr 2	<b>Ecosystem services debate</b> <b>Position statement due</b>

12	Apr 5	How do socioeconomics influence urban plant composition and diversity?
	Apr 7	How do socioeconomics influence urban plant composition and diversity?
	Apr 9	<b>Discussion: Kendal et al. (2012)</b>
13	Apr 12	Human health and quality of life in the city
	Apr 14	Human health and quality of life in the city
	Apr 16	<b>Discussion: Kuo &amp; Sullivan (2001)</b>
<b>The urban future</b>		
14	Apr 19	Planning for urban sustainability
	Apr 21	Planning for urban sustainability
	Apr 23	<b>Discussion: McKinney (2010)</b>
15	Apr 26	Citizen science poster presentations
	Apr 28	Citizen science poster presentations
	Apr 30	DAY OF REMEMBRANCE – NO CLASS
16	May 3	Citizen science poster presentations
	May 5	Wrap-up <b>Final paper due</b>

**The final exam period is Wednesday, May 12<sup>th</sup>, 8-10:30 am ONLINE. Graduate student presentations will occur during this time.**

## READINGS

- Anderson, P., Burg, D., Davis, M., Faggi, A., Holzer, K., Katti, M., ... Werner, P. (2014, July 7). How much should we worry about exotic species in urban zones? How do we reduce damage from exotic invasives when management resources are limited? Are there conflicts between management or eradication efforts and building general support for urban biodiversity? [Web log comment]. Retrieved from <http://www.thenatureofcities.com/2014/07/07/how-much-should-we-worry-about-exotic-species-in-urban-zones-how-do-we-reduce-damage-from-exotic-invasives-when-management-resources-are-limited-are-there-conflicts-between-management-or-eradication/>
- Kendal, D., Williams, N. S. G., & Williams, K. J. H. (2012). Drivers of diversity and tree cover in gardens, parks and streetscapes in an Australian city. *Urban Forestry & Urban Greening*, *11*, 257- 265.
- Kuo, F. E., & Sullivan, W. C. (2001). Environment and crime in the inner city – does vegetation reduce crime? *Environment and Behavior*, *33*, 343-367.
- McKinney, M. L. (2010). Urban futures. In K. Gaston (Ed.), *Urban ecology* (pp. 287-308). New York, NY: Cambridge University Press.
- Warren-Rhodes, K., & Koenig, A. (2001). Escalating trends in the urban metabolism of Hong Kong: 1971-1997. *Ambio*, *30*, 429-438.
- Weng, Y.-C. (2007). Spatiotemporal changes of landscape pattern in response to urbanization. *Landscape and Urban Planning*, *81*, 341-353.