

GEOG 4215/5215 Urban Ecology
Spring 2023

Lectures: MW, 2:30 – 3:45 pm

Location: McEniry 401

Credits: 3

Office: McEniry 314

Instructor: Dr. Sara Gagné

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Office hours: Mondays, 11 am – noon in person in my office or virtual at other times by appointment.

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

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 **30%**
- Citizen science poster **10%**
- Urban Heat Island presentation **15%**
- Ecosystem services position statement **15%**
- CGI proposal **30%**

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>).

Electronic devices policy

The use of cell phones is not permitted in this course unless specifically requested by the instructor. Persistent illicit cell phone use may result in a loss of marks and/or you will be asked to leave the classroom setting.

The use of laptops is permitted in this course for viewing lecture slides and/or taking notes. If you do plan on using a laptop for these purposes in the course, please inform me immediately of your intention. Laptops used for any other purpose may result in a loss of marks or being asked to leave the classroom setting.

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/>.

COVID-19 attendance policies

Students are expected to attend every class and remain in class for the duration of the session when it is safe to do so in accordance with university guidance regarding COVID-19. Failure to attend class or arriving late may impact your ability to achieve course objectives which could affect your course grade. An absence, excused or unexcused, does not relieve a student of any course requirement. Regular class attendance is a student's obligation, as is a responsibility for all the work of class meetings, including tests and written tasks. Any unexcused absence or excessive tardiness may result in a loss of participation points.

Students are encouraged to work directly with their instructors regarding their absence(s). For absences related to COVID-19, please adhere to the following:

- **Complete your Niner Health Check** each morning.
- **Do not come to class if you are sick.** Please protect your health and the health of others by staying home. Contact your healthcare provider if you believe you are ill.
- **If you are sick:** If you test positive or are evaluated by a healthcare provider for symptoms of COVID-19, indicate so on your Niner Health Check to alert the University. Submit a copy of your Niner Health Check notification email to your instructors. Upon learning that you have tested positive or have been diagnosed for symptoms of COVID-19, either from your reporting or from Student health Center testing or diagnosis, representatives from Emergency Management and/or the Student Health Center will follow up with you, and your instructors will be notified of the need for accommodations, as necessary.
- If you are **unvaccinated** and have been notified to self-quarantine due to exposure, indicate so on your Niner Health Check to alert the University. Representatives from Contact Tracing/Emergency Management and/or the Student Health Center will follow up with you as necessary. Submit a copy of your Niner Health Check notification email directly to your instructors.
- If you are **vaccinated AND symptomatic AND have been notified to self-quarantine** due to exposure, indicate so on your Niner Health Check to alert the University. Representatives from Contact Tracing/Emergency Management and/or the Student Health Center will follow up with you as necessary. Submit a copy of your Niner Health Check notification email directly to your instructors.

To return to class after being absent due to COVID-19, students should follow the instructions below:

	Residential Students	Non-Residential Students
Quarantine -- Close Contact UNVACCINATED	<ul style="list-style-type: none"> ● Resident students remain under the care of the Student Health Center and will be deemed clear to return to campus activities by a clinical professional. ● Once deemed cleared to return to campus activities, the COVID-19 Registry will send an email notification that you should forward to your instructor(s) as verification 	<ul style="list-style-type: none"> ● To return to class after being absent due to a period of self-quarantine, non-resident students have two options. <ul style="list-style-type: none"> ○ Option 1: Fulfill your full 14-day quarantine requirement, submit a Niner Health Check to confirm no symptoms, take a screenshot of the Niner Health Check clearance screen and email it directly to your instructor(s). ○ Option 2: If you have remained asymptomatic during your quarantine

	Residential Students	Non-Residential Students
	you've been cleared to return to class.	period, on day 9, you may be tested at the Student Health Center (SHC). You can then submit the documentation of a negative test from the SHC to your instructor(s). When you call the SHC to set up an appointment, make sure to tell them you are on day 9 of quarantine and want to test out.
Quarantine -- Close Contact VACCINATED	<ul style="list-style-type: none"> You do not have to quarantine unless you are symptomatic. If you are symptomatic, resident students remain under the care of the Student Health Center and will be deemed clear to return to campus activities by a clinical professional. Once deemed cleared to return to campus activities, the COVID-19 Registry will send an email notification that you should forward to your instructor(s) as verification you've been cleared to return to class. 	<ul style="list-style-type: none"> You do not have to quarantine unless you are symptomatic. If you are symptomatic, be tested immediately. You may call the Student Health Center to set up an appointment. Make sure to state you are symptomatic and need a test. You should remain in quarantine until your test results are returned. If negative, you may forward the documentation you receive from the Student Health Center to your professors. If positive, you will enter isolation and should follow the protocols below.
Isolation -- Positive COVID-19 Diagnosis	<ul style="list-style-type: none"> Resident students remain under the care of the Student Health Center and will be deemed clear to return to campus activities by a clinical professional. Once deemed cleared to return to campus activities, the COVID-19 Registry will send an email notification that you should forward to your instructor(s) as verification you've been cleared to return to class. 	<ul style="list-style-type: none"> To return to class after being absent due to a COVID-19 diagnosis, students should submit an online absence verification request form to Student Assistance and Support Services (SASS). Students should attach their positive test results directly to their request form. If you have additional medical documentation regarding your positive test, such as additional dates you should remain out of class, you may also attach this directly to your request form. Instructors will be notified of such absences once SASS is able to process your request. You should also forward your instructors any correspondence from University Contact Tracers that indicates your isolation end date due to a positive test result.

If a student provides faculty with correspondence from Emergency Management, University Contact Tracers, the Student Health Center, and/or Student Assistance and Support Services regarding their specific directive (self-quarantine, quarantine, or isolate) and/or indicating the student's isolation end date, this correspondence serves as official University documentation. Any of these forms of University communication are sufficient for reentry into the classroom.

LECTURE SCHEDULE (subject to change)

Week	Date	Topic/Activity
Introduction		
1	Jan 9	Introduction to course What is urban ecology?
	Jan 11	What is urban ecology? CGI proposal instructions
2	Jan 16	NO CLASS - Martin Luther King Jr. Day
	Jan 18	CGI workshop day
The Urban Ecosystem Part I: Geophysical components		
3	Jan 23	Discussion: Weng (2007)
	Jan 25	Urban heat islands
4	Jan 30	Group research for UHI presentation
	Feb 1	The carbon and nitrogen cycles in the city
5	Feb 6	The carbon and nitrogen cycles in the city Discussion: Warren-Rhodes & Koenig (2001) Draft CGI proposal due
	Feb 8	UHI presentations
The Urban Ecosystem Part II: Biological components		
6	Feb 13	UHI presentations
	Feb 15	Individual species and urbanization
7	Feb 20	Individual species and urbanization Final CGI proposal due
	Feb 22	Species diversity & invasive species Graduate student presentation topic due
8	Feb 27	NO CLASS – Spring Break
	Mar 1	NO CLASS – Spring Break
9	Mar 6	Discussion: Anderson et al. (2014)
The Urban Ecosystem Part III: Socioeconomic components		
	Mar 8	How do socioeconomics influence urban plant composition and diversity?
10	Mar 13	How do socioeconomics influence urban plant composition and diversity? Discussion: Kendal et al. (2012)
	Mar 15	Human health and quality of life in the city
11	Mar 20	Human health and quality of life in the city Discussion: Kuo & Sullivan (2001)
	Mar 22	Citizen science poster instructions CGI proposal follow-up
12	Mar 27	Ecosystem services How to write a persuasive paragraph
	Mar 29	Group research for ecosystem services debate
13	Apr 3	Group research for ecosystem services debate
	Apr 5	NO CLASS – Gagné away
14	Apr 10	Ecosystem services debate Position statement due
	Apr 12	Ecosystem services debate Position statement due

15	Apr 17	Ecosystem services debate Position statement due
The urban future		
	Apr 19	Planning for urban sustainability I
16	Apr 24	Planning for urban sustainability II
	Apr 26	Citizen science poster presentations
17	May 1	Citizen science posters presentations

The final exam period is Monday, May 8th, 2 - 4:30 pm. 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.
- 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.