

BIO 430 – Urban Ecosystems (3 credits)

Time: Mondays & Thursdays 2:00-3:20

Location: MNS 210

Instructor: Dr. Loren B. Byrne

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Office Hours: Mon., Tue. & Fri. 11am-12pm, Th. 1-2pm, or by appointment

Course Description:**Prerequisite:** at least one of BIO 104, ENGR 320, SOC 248/348, SUST 101 or consent of instructor

For the first time in history, more humans live in urbanized environments than in rural ones. Urbanization is expected to continue unabated into the future resulting in further anthropogenic impacts on ecosystems. The ecological characteristics of urban environments are the focus of urban ecology (within the natural sciences tradition), with a particular focus on examining relationships between sociocultural and ecological variables that affect ecological patterns. In this course, a range of topics will be explored, primarily from a biophysical science perspective, to better understand the unique ecological features of urbanized ecosystems. This will be accomplished in several ways: 1) reading and discussion of primary literature, 2) field observations of urbanized environments, and 3) a semester-long group research project. In addition, weekly journal entries and essay assignments will challenge students to 1) critique and integrate readings, 2) develop their own ideas and questions, and 3) improve their writing skills. This course is developed for upper-level students interested in integrating ecological knowledge with that from other disciplines to better understand the complex interactions of environmental and sociocultural variables that affect the characteristics of urban ecosystems.

WARNING: This course is reading and discussion intensive, like a senior seminar. This is not because the professor wants to give you “busy” work. Rather, this will promote your deeper learning of the course content.

Fulfills elective requirements for the Biology and Env. Science majors, minors and core concentrations

Fulfills an elective requirement for the Sustainability Studies minor

Course goals/outcomes:

After this course, students will have foundational knowledge and understanding that should enable them to:

- Describe a transdisciplinary conceptual framework for holistic study of urban socio-ecosystems
- Describe general patterns & ecological effects of urbanization around the world
- How sociocultural variables affect ecological variables in urbanized environments
- Discuss urban ecosystem services & disservices that affect the health of humans
- Communicate how ecological science data & theory can guide the sustainable design & management of urbanized landscapes to diverse audiences

Required texts: No textbook; required papers will be provided via Blackboard or as hard copies

Important dates: Feb 15 - last day to drop the course without receiving a W
March 28 - last day to drop the course and receive a W

Assignment submission & communications:

Dr. Byrne uses Blackboard for submission of assignments and to provide course materials. Email (.rwu accounts only) is also used regularly to provide course information and communicate important reminders.

Academic support services

If you are a student with a disability and you wish to receive academic accommodations for any aspect of this course, you must first register with Disability Support Services on the second floor of the University Library in the Center for Academic Development. All students wishing to receive accommodations must inform the professor and submit required forms **7 days** (\pm 1 day) in advance of every date for which an accommodation is sought.

Attendance policy:

Because we form a learning *community* in this course, the presence and participation of each student in each class benefits us all. Thus, attendance is expected (*read: required*) for all class meetings. Excused absences will be granted only for legitimate reasons (severe illness or other extenuating circumstances such as family emergencies) and only when the student informs the professor (by email is OK) in advance of the expected absence (ASAP or at least 12 hours notice for emergencies or illness).

- If you will miss class for legitimate religious observances, you must inform the professor ASAP.
- You will not receive credit for missed in-class work or exams due to unexcused absences.
- **NO MAKE-UP or extra credit** opportunities will be given in place of missed in-class work (incl. exams).
- Students are responsible for turning assignments in on time even if they miss the class period when the assignment is due. Points will be deducted from all assignments turned in late and dates will be established after which assignments will not be accepted and a score of zero will be assigned.

Academic integrity and classroom civility (including cell phone policy)

By becoming an RWU student, you have agreed to abide by the Academic Integrity pledge (“...to pursue the highest ideals of academic life... to be honest...”) which means that you will not cheat, fabricate information, plagiarize, be fraudulent or interfere with others’ work. The University Statement on Plagiarism in the Undergraduate Catalog reads: “A first offense may result in failure of the course involved, plus an entry on the student’s permanent record. A second offense is punishable by expulsion from the University.” **So don’t plagiarize!** The professor of this course is skilled in identifying plagiarism and will document this or any other instances of academic dishonesty in any student’s permanent file and/or will allow a student to fail the course.

In addition, maintaining academic integrity (e.g., civility) includes respecting others and learning how to disagree with ideas while not being disagreeable. All students should respect their classmates and the learning environment of a classroom; this includes not being disruptive by talking out of turn, texting on mobile devices or using computers for non-class purposes! **Such disruptions are distracting and disrespectful to the professor and other students and will not be tolerated.** Any student who violates these classroom policies will bear the consequences following the definitions, policies and procedures described in the University Catalog. In addition students engaging in such behaviors may be identified by name to the class, or be asked to leave the classroom if they do not conduct themselves civilly or cannot refrain from texting in class. In such instances, the student will receive an unexcused absence with loss of credit for in-class activities.

Required work & grading:

Students’ course grades will be based on the following assignments:

	% value of final grade
• In-class and home- work (e.g., discussion participation, quizzes, half sheets)	25%
• Reading engagement (TBD with input from students)	25%
• Formal writing assignments (TBD with input from students)	25%
• Group project	25%

Grading scale and the meaning of grades:

A= ≥93% Excellent	A- = 90-92.9% Great	B+ = 87-89.9% Very Good	B= 83-86.9% Good	B- = 80-82.9% Good
C+= 77-79.9% Average	C= 73-76.9% Average	C- = 70-72.9% Average	D= 60-69.9% Poor	F= ≤59.9% Failure

Suggestions for improving your success in this (and all) classes:

- Actually do the readings! This will help increase your success as a student and citizen.
- Spend ≥2 hrs per class period outside of class (≥6 hrs per week) reading, studying and working on projects.
- Maintain a list of vocabulary words and their definitions; learning words and how to use them correctly is essential to becoming a successful and respected person/scientist/student!
- Write down questions and muddy-points in your notes and ASK about them discuss in class.
- Work with classmates to improve your learning! Study together, edit each others’ papers, etc.
- **Remember: Ultimately you are responsible for your own learning! No one else but you can rewire the neurons in your brain to generate personal understanding and knowledge.**

Urban Ecosystems Course Schedule

Special note: In addition to the dates below, **required** field trips will be scheduled during the semester, possibly outside of regular class time and on weekends. These will replace certain class days.

Week **Lecture/discussion topic** **Readings (TBD = to be determined)**
*On some dates, students may not need to read all listed articles.
 All listed readings are suggestive & subject to change.*

1	1/27: What are urban ecosystems? Are they natural?	
2	1/31: Disturbance or ecosystem engineering? 2/3: Global urbanization: places & populations	2/1: Jones et al. 1994, Turner et al. 01 2/3: TBD
3	2/7: How should ecologists study urban ecosystems? 2/10: Integrating the social & natural sciences	2/7: Pickett et al. 1997, Grimm et al. 2000, Alberti et al. 2003 2/10: McIntyre et al. 2000, Redman et al. 2004
4	2/14: Introduction to urban sociology 2/17: No class	2/14: TBD
5	2/21: Ecology “in” vs. “of” the city 2/24: Sociocultural drivers of ecological patterns	2/21: Pickett et al. 2001 or 2011 2/24: Nassauer 88, Hope et al. 03, Liu et al. 03
6	2/28: Urban biodiversity I: introduction 3/3: Urban biodiversity II: birds & bugs	2/28: McKinney 2002, TBD 3/3: TBD
7	3/7: Urban biodiversity II: food webs 3/11: Urban habitat structure & soils	3/7: Faeth et al. 05, Palomino and Carrascal 05 3/11: Byrne 07, Pavao-Zuckerman & Byrne 09
8	3/21: Urban soils & ecosystem processes 3/24: Group work or Field trip place-holder	3/21: TBD
9	3/28: Urban ecosystem services & disservices 3/31: Group work or Field trip place-holder	3/28: TBD
10	4/4: Landscape heterogeneity & management 4/7: Urban hydrology	4/4: Byrne and Grewal 2009, Nassauer 94 4/7: TBD (Kaushal et al. 2005?)
11	4/11: Toward healthier urban ecosystems & people 4/14: Group project work	4/11: Jackson 2003, Stone 2004
12	4/18: Synthesis: biogeosociochemistry of lawns 4/21: Synthesis: biogeosociochemistry of lawns	4/18: Falk 1976, Jenkins 1994, Byrne 2005 4/21: Byrne and Bruns 04, TBD
13	4/25: Group work or Field trip place-holder 4/28: Buildings as ecosystems & HP	4/28: Mueller Report 2006
14	5/2: Synthesis: toward urban sustainability? 5/5: Group work	5/2: TBD
15	5/9: TBD	5/9: TBD

Final exam period: Wed May 18, 4-6pm: TBD

****The professor reserves the right to modify this schedule at any time as necessary****