

ADVANCED STUDIES IN URBAN FOREST ECOSYSTEMS

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Office Hours	Please email to make an appointment. If you are on campus, feel free to stop by any time.	Best way to contact:	E-mail

If you are a person with a disability and desire any assistive services or other accommodations to participate in this class, please contact the instructor as early as possible to discuss accommodations. See "Disability Accommodations" later in the syllabus for more information.

Overview

The nature and dynamics of urban ecosystems with a primary emphasis on the role of urban forests. A multi-disciplinary approach will be used to examine the interactions of urban forests with the built environment at multiple scales and how management can influence ecosystem processes. Primary literature, case studies and other readings will allow exploration of topics in a variety of urban environments, from urban cores to peri-urban development.

Note: This syllabus is for online students.

Learning Objectives

After completing this course students will be able to:

- Identify the significant characteristics of urban ecosystems that distinguish them from nonurbanized systems.
- Categorize the diversified benefits of urban forests in terms of ecosystem services.
- Describe the ecosystem processes and services mediated by urban forests.
- Distinguish the geographical, socio-political, and environmental factors that influence urban forest management in different regions and countries.
- Interpret the effects of a variety of urban land uses and site designs on urban vegetation and ecosystems at site-level, city-wide, and regional scales.
- Critique primary literature in urban forestry, urban ecology, and related disciplines both in the context of the student's own research interests and in terms of current trends and objectives in the discipline.
- Support arguments for or against urban ecosystem management approaches based on current research.

Pre-requisites

This is a graduate level course. Therefore the ability to perform graduate-level work is required. To get the most out of this course, Urban Forest Management and Policy (FREC 5454G) or similar background is recommended as a pre-requisite or co-requisite, however students of all backgrounds are welcome. Students are also expected to be

familiar with how to conduct searches of the scientific literature in the Virginia Tech library. If you are not familiar with this process, these resources may help you get up to speed:

How to get started with research in the Life Sciences and Natural Resources: <http://www.lib.vt.edu/subject-guides/start/agriculture-life-natural-resources.html>

Contact our college librarians for one-on-one assistance or advice on where to find tutorials:

- College of Natural Resources and Environment: Kiri Goldbeck De Bose kgoldbec@vt.edu
- College of Agriculture and Life Sciences: Inga Haugen ihaugen@vt.edu

Textbooks & Software

(Required) Niemela, Jari, (2012) Urban Ecology: Patterns, Processes, and Applications. Oxford University Press 392 pp. This text is available through online retailers such as Amazon and as an ebook through the library.

Technical Requirements and Support

All students are required to have:

- A computer with a high-speed internet connection that allows video streaming, large file transfers, etc.
- Access to and the skills to use modern computer software including: the most recent version of a web browser with video-viewing capability (Firefox is recommended), a word processing program that can produce either MS Word- or PDF-formatted documents, a presentation software such as Powerpoint, email capabilities, etc.

Communicating with the Instructor & with other Students

Use the “Inbox” tool

The Canvas site includes a “Inbox” tool on the left-hand side—in the maroon-colored column. Use this tool to communicate with fellow students and the instructor. You can choose to send messages to everyone, just instructors, or particular individuals or groups. The messages tool has the advantage of keeping a record of your communication.

Post Questions in the Student Lounge

In an online setting sometimes it is easy to forget you have classmates. Make use of the Student Lounge to post general questions or comments to other students in the class. Most students find this very helpful.

Be Respectful of other Students and the Instructor

Please only send messages to all participants when necessary and be sensitive of other people’s time. All language and communications should be appropriate to a professional setting.

Class Management & Policies

- Course materials are available on Virginia Tech’s **Canvas** system. It is expected that students will check Canvas regularly. Announcements and messages on Canvas are considered delivered. Depending upon your settings, you may or may not get an email when something is posted on the Canvas site. This reduces the clutter in your email box, but also means you need to check the site at least once a week and not wait for it to interact with you via email.

- **Participation** is essential to success in the class. If you will be unavoidably absent, please notify the instructor *in advance* via email. In all cases it is very important that you complete the reading and have thoughts and questions BEFORE any discussions. Class learning is dependent upon interaction among everyone in the class—so be sure and hold up your end.
- Virginia Tech’s [Graduate Honor Code](#) is to be followed in this class, as in all other graduate work. If you are not familiar with this code, please take a moment to read about it. Exercising honesty and ethical behavior in all academic pursuits not only insures fairness and preserves the value of your degree, but elevates the stature and validity of your scholarship. Cheating, falsification, plagiarism, and academic sabotage are honor code violations. The success of this class depends upon open communication between the instructor and students and among students. Thus sharing with fellow students is generally encouraged. Graded assignments should be your own work, however. If you are in any way unsure what is appropriate and not appropriate, please ask the instructor or raise the question on the discussions. In general, always reference your sources—giving credit where it is due will always reflect well upon you.

Grading

Course grades will be calculated according to the following:

Reading Reflections	One per unit	30%
Discussion (online and via video)	Approximately one per unit	20%
Leading Class Discussion (via video)	One time	15%
Final Project & Bibliography	One time	35%
Total		100%

Assignments

In addition to completing all reading and participating in class, everyone will complete the assignments described below. Each of these assignments may have multiple elements.

Be aware of the following conventions concerning assignments:

- Assignments along with their due dates, any models or attached documents, etc. will be provided to students on Canvas.
- Reading Reflections and Discussions must be completed/handed in on time and **will not be accepted late**. For all other assignments, the late policy will be included on the assignment.
- Submitted files must be Microsoft Word files or PDF. The instructor will not be able to read other formats (sorry!).
- Include your last name and first initial at the beginning of your file name. For example: DaySAssignment1.pdf
- Assignments that require document submissions must be submitted via Canvas. Do not email assignments directly to the instructor—they may be misdirected and you will have no confirmation that you submitted it. I receive many hundreds of emails each week, so it is easy for things to get lost in there.
- **Detailed written or video feedback is provided on all assignments** and it is important that you review this feedback before progressing in the course as assignments build on one another. Therefore, please check Canvas to view the feedback on your assignments.

Description of Assignments

Reading Reflections: For each Unit students will submit a one-page Reading Reflection based upon the readings/videos/etc. These are intended to get you thinking critically about the readings before any discussion and as a means of communication between students and the instructor (yes, you will get feedback on every reflection). **Your reading reflections may be shared with the rest of the class and will be shared with at least one other student via peer review.**

Leading Class Discussion: Each student will be assigned a date in the semester to assist in leading class discussion. Discussion leaders should prepare a set of questions/topics to discuss concerning the reading for that topic. To receive an “A” as discussion leader, the leader should read the assignments a week ahead and find a current paper or article of interest that adds to the discussion. Make this available to other students the week before via the “Inbox” tool by sending an attachment. See the **Leading Class Discussion** handout posted in Assignments for more information and to see the evaluation rubric. Some students like to begin the class discussion with a short overview of the topic (5 to 10 minutes).

Final Project & Bibliography: Each student will pick a topic of interest and develop a 10-15 minute presentation on this topic and an annotated Bibliography. This assignment includes three elements: a topic proposal, an annotated bibliography, and a presentation. All of these items will be shared with the entire class.

Topics

Urban Forest Ecology and the Urban Environment

- What is urban forest ecology?
- Urbanized ecosystems
- Ecosystem services and managing the “Commons”

The Below-ground Urban Environment

- Urban soils and infrastructure—how they affect urban forests
- Urban rhizosphere
- Engineered rooting environments

Urban Hydrology and Urban Forests

- Urban waterways and water quality and supply issues
- How do trees affect the ecology of urban streams?
- Role of urban trees in stormwater capture
- Design and management of urban forests for water quality improvement

Urban Forests and Climate Change

- Issues with climate change
- Urban heat islands and climate change stresses
- Urban forests and carbon capture
- Resilience of urban forest ecosystems

Urban Forest Ecology and Issues with Scale

- Urban-rural gradients and heterogeneity
- Urban ecosystems at the regional scale
- Urban ecosystems at the site scale

Urban Forests and Trends in Sustainability

- Implications of Trends in Sustainability

- Restoration, brownfields, combining engineered and natural systems for ecosystem regulation
- Sustainability Certification Programs

Technical Support

If you are experiencing technical difficulty accessing materials that you need for this course or a general technical support question please request assistance by filling out the 4help form linked on the Canvas site. When making a request please be sure that you provide as much detail (name, problematic URL or module, operating system, description of problem) as possible to help solve your problem more efficiently. I cannot answer technical questions about your computer setup but I DO want to know if you have having problems with accessing any material—so please keep me in the loop. Virginia Tech’s Customer Support Center (www.4help.vt.edu) is available 24/7 to reset passwords, monitor system outages, and answer questions on a wide variety of computer related issues. Moreover, you can find answers to many of your questions by searching Virginia Tech's Knowledge Base (www.answers.vt.edu).

Disability Accommodations

Any student needing special accommodations due to a disability, as recognized by the Americans with Disabilities Act, should contact the Services for Students with Disabilities in the Dean of Students Office. Students with disabilities are responsible for self-identification. To be eligible for services, documentation of the disability from a qualified professional must be presented to SSD upon request. Academic adjustments may include, but are not limited to: priority registration, auxiliary aids, program and course adjustment, exam modifications, oral or sign language interpreters, cassette taping of text/materials, note takers/readers, or assistive technology.

For more information, please contact:

310 Lavery Hall, Mail Code (0185)
Blacksburg, VA 24061
(540) 231-3788 Voice (540) 231-0853 TTY (540) 231-3232 FAX
E-mail: ssd@vt.edu
Website: <http://www.ssd.vt.edu>

Permitted Use of Course Materials

All materials provided in this course are limited to use by students who are enrolled in this course for the current semester. As a student enrolled in this course, you are expressly prohibited from using these materials outside of the course without the instructor’s specific consent. "Materials" includes: all lectures, handouts, PowerPoint presentations, quizzes, tests, homework, and any other assignments and assessments as well as all information provided on Canvas for this course. Using the materials outside of this course includes, but is not limited to, selling the information to any organization that then makes the information available to other students for study guides.