

FALL 2018
GRADUATE COURSE OUTLINE – FIRST QUARTER
MASTER OF LANDSCAPE ARCHITECTURE PROGRAM

COURSE CODE & TITLE: LAN2045H - LANDSCAPE ECOLOGY
CLASSROOM LOCATION: 1 SPADINA, ROOM 215
CLASS HOURS: FRIDAYS 9AM-12PM noon* (1 full day 12 Oct)
QUERCUS: Fall-2018-LAN2045H-F-LEC0101

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COURSE DESCRIPTION:

This course forms the first half of a core of environmentally oriented courses in the Master of Landscape Architecture Program. Through focused study of ecological principles and case examples, we will explore concepts and methodology important for site interpretation that are specific to urban and peri-urban areas, and how they apply to the discipline of landscape architecture. Since landscape architects are agents of change in local ecological systems, we will discuss the integrity and 'natural-ness' of ecological design, including how to extrapolate and acknowledge realistic expectations and project feasibility, which are important for designers, clients, as well as the natural environment. Common assumptions associated with relevant topics in urban ecosystem studies will be discussed including urban forests, biodiversity, ecological restoration, horticulture, green infrastructure, and climate change. Over the semester, students will be challenged to interpret their own reasoning for the value of nature's services in the context of landscape design and urbanity.

COURSE OBJECTIVES:

1. To evaluate ecological design objectively, and its place in the practice of landscape architecture.
2. To gain knowledge and appreciation of biodiversity and its significance to urban landscapes.
3. To synthesize concepts in urban ecology shaped by building, landscape, and stochastic change.
4. To understand the role of scale when interpreting the impact of ecological designs.
5. To learn to communicate and problem solve with ecologists to build a framework for collaboration.

SCHEDULE:

The course is delivered through lectures, field trips, assigned readings, and student presentations. The lectures provide an overview of ecological concepts and cover an ecological theme relevant to ecological design, including case studies, a guest lecturer or group presentations. Time will be made at the end of most lectures for discussion.



UNIVERSITY OF TORONTO
JOHN H. DANIELS FACULTY OF
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Conflicts with religious observances should be brought to the attention of the course instructor and the Office of the Registrar and Student Services no later than the second week of classes. For more information, please see the *Policy on Scheduling of Classes and Examinations and Other Accommodations for Religious Observances*.

Week	Dates (Fri)	Details and Sessional Information*
1	Sept 14	Lecture 1 - Course Intro, concepts in urban ecology & landscapes Lecture 2 – Forest & tree inventories Local Street Tour – if time & weather permits!
2	Sept 21	Lecture 3 – Fragmentation, disturbance Lecture 4 – Biodiversity & natural heritage
3	Sept 28	Lecture 5 – Ecological restoration Due Assignment 1: Urban Tree Inventory (pair - 30%)
4	Oct 5	GUEST LECTURE: Peter Simon (City of Toronto) Lecture 6 Green infrastructure – Development, nature, design & maintenance
5	Oct 12	SITE VISIT: ALL DAY FIELD TOUR – CITY OF TORONTO - rain or shine! Due Assignment 2: 'Urban Forests' Ecological Term Review (individual - 20%)
6	Oct 19	Assignment 3: Field Tour Ecological Report (DUE 26 October individual - 10%) Class Presentation & Critique (6 groups) Assignment 4: Ecological Critique of Campus Landscape Design (DUE 29 October group - 40%)

Important Dates:

This course is 6 weeks in length (half of the academic term). Please refer to the Daniels Faculty website for a complete listing of all Daniels sessional dates. (<https://www.daniels.utoronto.ca/current-students/graduate-students/academics-and-registration>). Please note that the half term dates will differ from the full term dates. The School of Graduate Studies sessional dates are available at <http://www.sgs.utoronto.ca/currentstudents/Pages/Sessional-Dates.aspx>.

- Monday, September 3, 2018 – Labour Day, University Closed
- Monday, September 10, 2018 – First day of classes
- Monday, October 8, 2018 – Thanksgiving, University Closed.
- Monday, October 1, 2018 – Final day to drop classes
- Monday, October 15 to Friday, October 19 – Final presentations and assignments due

Conflicts with religious observances should be brought to the attention of the course instructor and the Office of the Registrar and Student Services no later than the second week of classes. For more information, please see the [Policy on Scheduling of Classes and Examinations and Other Accommodations for Religious Observances](#).

All student work must be removed from all Daniels Faculty studio spaces by the last date of each academic term (Fall/Winter/Summer). The last day of the Fall 2018F academic term is December 21, 2018. Any work remaining in studio past this date will be disposed of.

COURSE EVALUATION:

While there are no grades associated with class participation, students are expected to come to class, attend field tours (if required), and participate in the lecture topics and discussions.

Assignment 1: Urban Tree Inventory (30%) (pairs) DUE: 28 September

North American cities are rushing to set forest canopy targets and implementing planting and design strategies to meet them both on public and private lands. The ecological rationale for this is the tremendous, broad-level ecosystem services that green space can provide to improve liveability and human health. Tree canopy goals of 30-50% are not uncommon, even in densely urbanized metropolises such as NYC (30%) and Toronto (40%). As a result, municipalities are starting to account for trees and shrubs as green infrastructure assets due to significant investments made in valuation both for establishment (occupancy costs) and long-term maintenance (post-occupancy costs). Unfortunately, building green infrastructure does not mean it will be resilient into the future, nor that what is put in now (new development) will become what has been observed in the past (older treed neighbourhoods). Pairs of students will be asked to conduct their own urban tree inventory of 30 trees (minimum) to assess current condition and develop guidelines for hypothetical redesign (i.e. retain, remove, transplant, adjust, etc. designs). The assignment will be evaluated on: 10% Inventory data + 5% Interpretation + 10% Recommendations + 5% Writing.

Assignment 2: 'Urban Forests' Ecological Term Review (20%) (individual) DUE 12 October

Landscape architects make common use of ecological concepts and terminology within which they envision and design projects. If not understood clearly from an ecological perspective, these terms can be used inappropriately and lead to misinterpretation and challenges when dealing with professionals outside the discipline. In order to achieve more effective designs and better implementation of landscape work it is important to have some familiarity with the thinking and important components surrounding landscape ecology. As such, it will facilitate better interaction with professional foresters and ecologists, as well as align with the growing number of public citizens who are socially and politically primed to support these initiatives. Students will be assigned to read an individual chapter in the new book, *"Urban Forests: A Natural History of Trees and People in the American Cityscape"* by Jill Jonnes and to provide a 3-4 page critique of the chapter referencing common ecological terms. Outside references are required and the assignment will be evaluated on: 5% Overview + Ecological knowledge 5% + Referencing 5% + Writing 5%.

Assignment 3: Field Tour Ecological Report (10%) (individual) DUE 19 October

Large Canadian cities are experiencing rapid development and urbanization, both in their core urban and peri-urban areas. Toronto and the Greater Toronto Area (GTA) is no exception being home to some of the world's most intensive development. Fortunately, the region still retains unique natural heritage components such as ravine systems, woodlots, parks, and waterfront areas. Students will be taken on a



full-day field tour across Toronto to learn about their greenspace projects. The tour begins at the Brickworks where planting and community stewardship programs are being implemented and free lunch will be provided. The next stop will be at the Distillery District where we examine commercial tree operations, and the trip ends at High Park with restoration and natural heritage projects. Students are required to write a short (1-2 page, single-spaced) 'learning experience' overview of the trip, tying ecological terminology and thinking from class. The assignment will be graded on: 4% Overview + Ecological knowledge 4% + Writing 2%.

Assignment 4: Ecological Critique of Campus Landscape Designs (40%) (group) DUE 19 October

Incorporating ecological thinking into landscape design requires a solid understanding of ecological concepts and processes. Unfortunately, along with increasing demand for critical green space comes increasing conflict and challenges in balancing the demands for human use with ecological functioning and integrity. Along with the ecological obstacles come differences in policy, land ownership (private vs public), and investment in post-occupancy maintenance. Vision (or lack thereof) also has an important impact on what can be achieved by the landscape architect when incorporating ecological thinking, especially over time. As our understanding of natural heritage elements and the necessary ecological processes surrounding them grows, being green is no longer sufficient. If our goal is to achieve a healthier functioning ecosystem of connected green space where communities of native flora and fauna can flourish for human well-being, then we need to critically evaluate past successes and failures ecologically and incorporate adaptive responses to improvements, be they restoration, rehabilitation or renewal. Toronto's green space is better than most, but ecologically is not in great shape. Its peri-urban green corridors are being fragmented, natural woodlots are becoming degraded, and the biodiversity of its ravines are being simplified by invasion by introduced species; all are now in need of major restoration.

Each team of students (3-5) will be assigned a campus-based landscape design; 1) one 30 years old (Hough-Earth Sciences Courtyards), 2) one just completed (Daniels-1 Spadina), and 3) one proposed (Landmark-Front campus). Students must investigate the design elements from an ecological perspective and provide a critique of the current and future state of the project in terms of the technical considerations including anticipated maintenance (estimated costs) over a period of 10-20 years. The critiques will be presented in the last class with two teams each assigned to one of the three designs. The assignment will be evaluated on: 20% Plan & rationale* + 10% Written evaluation + 10% Presentation. Keep in mind the context and timeline of the projects within a larger urban landscape and the need to improve broad ecological services.

***Note:** The expectation is that your evaluation and critiques will be made from an ecological perspective. You should be thinking about: What components/species have/or will work ecologically, and Why? Considerations might include some or all of the following: (1) species/cultivars/size; (2) relative location of gray and green infrastructure; (3) light/wind requirements or temperature constraints; (4) site preparation necessary (grading/soil); (5) water access and drainage; (6) **maintenance requirements over time (timeline)**; and (7) past/future costing for post-occupancy (although clearly not ecological!).

All images and written assignments, unless otherwise stated, should be submitted **electronically (PDF preferred) to QUERCUS**. Written papers should be single-spaced, 12-point Times Roman font. Remember to use proper referencing where appropriate (APA or similar format), the key being consistency in formatting.

Web sites may be valuable resources for assignments, but make sure they are reputable and be sure to reference them properly (date accessed).

GENERAL EVALUATION:

Evaluation will be carried out in accordance with the University Assessment and Grading Practices Policy. Please refer to the policy located on the governing council website.

http://www.governingcouncil.utoronto.ca/Governing_Council/policies.htm#G

The graduate grading scale differs from the undergraduate grading scale. Please see below the graduate grading scale for your reference. All graduate grades will be submitted as a letter grade.

Graduate		
Letter Grade Scale	Grade Meaning	Numerical Scale of Marks
A+		90 – 100%
A	Excellent	85 – 89%
A-		80 – 84%
B+		77 – 79%
B	Good	73 – 76%
B-		70 – 72%
FZ (=Fail)	Inadequate	0 – 69%

Please refer to the University of Toronto Grading Practices Policy for additional information:

<http://www.governingcouncil.utoronto.ca/Assets/Governing+Council+Digital+Assets/Policies/PDF/grading.pdf>

LATE WORK:

All assignments are due in class or on Quercus at the specified time and date. Late submission will result in a 5% deduction (of each assignment's total grade) per day (excluding weekends). In the case of illness or other special circumstance, notification should be given to the Instructor as soon as possible and before the deadline in question; where required, the official University of Toronto [Verification of Student Illness or Injury](#) form must be submitted. Additional information is available on the Verification of Illness or Injury is available online: <http://www.illnessverification.utoronto.ca/Frequently-Asked-Questions.php>

FINAL DUE DATE:

Due dates are set by the Instructor in the schedule and evaluation sections of this outline. All term work must be submitted on or before the deadline date stipulated by the instructor. Students who for reasons beyond their control are unable to submit an assignment by its deadline must obtain approval from their Instructor for an extension within the term. The last date of the half term is October 19, 2018. Any work



submitted after the stipulated deadline and before the end of term without an approved extension will not be accepted. Students will be required to petition for an extension if they will be unable to submit their work by October 19, 2018. <http://www.sgs.utoronto.ca/Documents/Extension+to+Complete+Coursework.pdf>

Students are advised to contact their professors in advance of a deadline, where possible. Those students registered with Accessibility services should provide you with a letter from their advisor that confirms their registration and indicates their required accommodations. Please speak with Andrea McGee in the ORSS if you have any questions or concerns regarding their letter of accommodation and how to interpret the information. Otherwise, students should present you with a Verification of Illness or Injury form (VOI). Without any documentation, or where notice was not given, the ultimate decision is at the instructor's discretion.

PREPAREDNESS AT UOFT:

Students are advised to register for UTAAlert, the University's alert system, at <http://alert.utoronto.ca/>. UTAAlert sends important messages to registrants via text, email, and phone.

ACCESSIBILITY NEEDS:

The University provides academic accommodations for students with disabilities in accordance with the terms of the Ontario Human Rights Code. This occurs through a collaborative process that acknowledges a collective obligation to develop an accessible learning environment that both meets the needs of students and preserves the essential academic requirements of the University's courses and programs.

If you are a student who identifies with one or more of the broad categories below, we encourage you to register with Accessibility Services (<http://www.accessibility.utoronto.ca/>). New student registration packages need to be submitted by October 5 in order to receive December 2018 Exam accommodations. For any questions or assistance, please see the staff in the Office of the Registrar and Student Services.

- Attention Deficit Hyperactivity Disorder (ADHD)
- Autism Spectrum Disorder
- Brain Injury and Concussion
- Chronic Health
- Deaf and Hard of Hearing
- Learning Disability
- Mental Health
- Mobility and Functional
- Low Vision / Legally Blind
- Temporary Injuries

ENGLISH LANGUAGE AND WRITING SUPPORT:

The University of Toronto expects its students to write well, and it provides a number of resources to help. Please consult the University of Toronto writing site (<http://www.writing.utoronto.ca/>) for advice and answers to your questions about writing. Please pay special attention to "Advice on Writing: Academic Writing."

Academic writing carries with it certain expectations about properly citing, quoting, and referencing source material. Your research must be conveyed in a language commonly shared by others in the discipline. The



style guidelines preferred by the Daniels Faculty are put forth in the Chicago Manual of Style and can be found here:

<http://www.chicagomanualofstyle.org/16/contents.html>

<https://owl.english.purdue.edu/owl/resource/717/01/>

The Centre for International Experience (CIE) English Language Support is also available to support students: <https://www.studentlife.utoronto.ca/cie/els>

The Writing Centre at the John H. Daniels Faculty of Architecture, Landscape, and Design (<http://www.daniels.utoronto.ca/resources/writing-program>) is a resource for Daniels students seeking assistance with academic writing through tutorials and individual consultations. Students may access the online appointment booking system at: <https://awc.wdw.utoronto.ca>

ACADEMIC INTEGRITY:

Academic integrity is essential to the pursuit of learning and scholarship in a university, and to ensuring that a degree from the University of Toronto is a strong signal of each student's individual academic achievement. As a result, the University treats cases of cheating and plagiarism very seriously. The University of Toronto's Code of Behaviour on Academic Matters (www.governingcouncil.utoronto.ca/policies/behaveac.htm) outlines the behaviours that constitute academic dishonesty and the processes for addressing academic offences. The Code of Behavior on Academic Matters states: "It shall be an offence for a student knowingly [...] to represent as one's own any idea or expression of an idea or work of another in any academic examination or term test or in connection with any other form of academic work, i.e, to commit plagiarism." The Code also states: "Wherever in the Code an offence is described as depending on 'knowing,' the offence shall likewise be deemed to have been committed if the person ought reasonably to have known."

Potential offences include, but are not limited to:

In papers and assignments:

1. Using someone else's ideas or words without appropriate acknowledgement.
2. Submitting your own work in more than one course without the permission of the instructor.
3. Making up sources or facts.
4. Obtaining or providing unauthorized assistance on any assignment.

On tests and exams:

1. Using or possessing unauthorized aids.
2. Looking at someone else's answers during an exam or test.
3. Misrepresenting your identity.

In academic work:

1. Falsifying institutional documents or grades.



2. Falsifying or altering any documentation required by the University, including (but not limited to) doctor's notes.

All suspected cases of academic dishonesty will be investigated following procedures outlined in the Code of Behaviour on Academic Matters. If you have questions or concerns about what constitutes appropriate academic behaviour or appropriate research and citation methods, you are expected to seek out additional information on academic integrity from your instructor or from other institutional resources. For information about academic integrity at the University of Toronto, please see www.academicintegrity.utoronto.ca

Normally, students will be required to submit their course essays to Turnitin.com for a review of textual similarity and detection of possible plagiarism. In doing so, students will allow their essays to be included as source documents in the Turnitin.com reference database, where they will be used solely for the purpose of detecting plagiarism. The terms that apply to the University's use of the Turnitin.com service are described on the Turnitin.com website.

For accepted methods of standard documentation formats, including electronic citation of internet sources please see the U of T writing website at: <http://www.writing.utoronto.ca/advice/using-sources/documentation>. Please also refer to "Reading and Using Sources: How Not to Plagiarize" on the University of Toronto writing site (<http://www.writing.utoronto.ca/>).

REPRODUCTION RIGHTS:

On occasion, the John H. Daniels Faculty of Architecture, Landscape, and Design (the Faculty) will reproduce, use, exhibit, display, broadcast, and distribute images of student work completed in this course in connection with the activities of the Faculty for promoting, publicizing, or explaining the activities of the school. Unless you notify use otherwise at communications@daniels.utoronto.ca, your participation in this course grants the Faculty permission to publish such images in PR/promotional materials such as marketing, advertising, fundraising, and any other Faculty-related publication. These images may appear in a wide variety of formats including but not limited to print, broadcast, videotape, CD-ROM, and online media.

ATTENDANCE:

It is expected that all students attend lectures, as they are chosen and designed to help with the course assignments. If a student cannot make it to a lecture, it is expected that the student is getting updates from classmates. Whenever possible, PowerPoint presentations of lectures will be uploaded to Quercus, but be advised that this material alone will often not suffice to understand what was taught in the class. It is not the instructor's nor the TA's responsibility to inform students about a lecture's content when a lecture was missed.

All students are expected to appear some minutes ahead of the lecture, so that the lecture can start on time. This is especially important for guest lectures, as it is a sign of disrespect to the guest lecturer if students arrive late and thus disturb the lecture. To avoid lateness due to time required to change rooms from a previous lecture, the course will start every week at 4:10pm (which means that you are required to arrive BEFORE that time).



COMMUNICATION WITH INSTRUCTOR AND TA:

You can communicate with the course instructor either in person before or after the lecture, or by email (see email address above). Students can write to the instructor or TA for a meeting any time, if necessary. The TA may not attend all lectures but will generally be able to answer emails and arrange meetings by email, if needed. For all communication by email, it is advised to use your official University of Toronto account (e.g., @mail.utoronto.ca), as sometimes emails coming from other email providers will end up in the spam folder.

STUDENT SUPPORT:

In order to excel in this course, students must keep up with the assignments and readings, as well as attend lectures. As outlined above, the course is designed to help students achieving excellency, when all instructions are followed. If in doubt about the understanding of any course content, please contact the TA or course instructor. Because writing is a key-component in the assignments of this course, please refer to the University of Toronto's Writing website (<http://advice.writing.utoronto.ca/>).

HEALTH AND SAFETY:

The course follows the [University of Toronto's Health and Safety Policy](#) and students are responsible for being safe in compliance with this policy.

MENTAL HEALTH AND WELLNESS:

As a university student, you may experience a range of health and/or mental health issues that may result in significant barriers to achieving your personal and academic goals. The University of Toronto offers a wide range of free and confidential services and programs that may be able to assist you and you should seek out these resources early and often.

Student Life Website: <http://www.studentlife.utoronto.ca>

Health and Wellness Website: <http://studentlife.utoronto.ca/hwc>

If, at some point during the year, you find yourself feeling distressed and in need of more immediate support, visit the Feeling Distressed Webpage: <http://www.studentlife.utoronto.ca/feeling-distressed>, for more campus resources.

All students in the Faculty of Engineering have an Academic Advisor who can advise on academic and personal matters. You can find your department's Academic Advisor here:

<http://undergrad.engineering.utoronto.ca/advising-support-services/academic-advising/>

Immediate help is available 24/7 through Good2Talk, a post-secondary student helpline at 1-866-925-5454.

ACKNOWLEDGING TORONTO'S FIRST PEOPLES:

Toronto is a city of immigrants and has been for hundreds of years and has been a gathering site for humans for over 15,000 years. This sacred land is the territory of the Huron-Wendat and Petun First Nations, the Seneca, and most recently, the Mississaugas of the Credit River.



The territory was the subject of the Dish with One Spoon Wampum Belt Covenant, a coming together of the Iroquois and Ojibwe Confederacies and other allied nations to peaceably share and care for the resources around the Great Lakes.

Today, Toronto is still a meeting place for Indigenous people from across Turtle Island, and immigrants, both new and old, from across the world. We are grateful to have the opportunity to work in the community, and on this territory.

COURSE READINGS (background only)

Lecture 1: 'Introduction Urban Ecology & Forest Landscapes'

- Childers et al. (2015). An ecology for cities: A transformational nexus of design and ecology to advance climate change resilience and urban sustainability. *Sustainability* 7, 3774-3791.
- Felson et al. (2013). Mapping the design process for urban ecology researchers. *BioScience* 63, 554-565.
- *Forman R. (2016). *Urban Ecology: Science of Cities*. Cambridge University Press. 462 pp.
- Hammond, H. (2009). Maintaining Whole Systems on Earth's Crown: Ecosystem-Based Conservation Planning for the Boreal Forest. Silva Forest Fdn Pub. 390 pp.
- Louv, R. (2007). Leave no child inside. *Orion Magazine* 57, 1-6.
- Pickett et al. (1997). A conceptual framework for the study of human ecosystems in urban areas. *Urban Ecosystems* 1, 185-199.
- *Turner et al. (2001). *Landscape Ecology: In Theory and Practice, Pattern and Process*. Springer-Verlag, NY. 403 pp.

Lecture 2: Forest & Tree Inventories

Lecture 3: 'Landscape Drivers, Fragmentation & Disturbance'

- Colding. (2007). Ecological land-use complementation' for building resilience in urban ecosystems. *Landscape and Urban Planning* 81, 46-55.
- Collinge. (1996). Ecological consequences of habitat fragmentation: Implications for landscape architecture and planning. *Landscape and Urban Planning* 36, 59-77.
- DelTredici. (2010). Spontaneous urban vegetation: Reflections of change in a globalized world. *Nature and Culture* 5, 299-315.
- *Forman et al. (1998). Roads and their major ecological effects. *Annual Review of Ecology and Systematics* 29, 207-231.

Lecture 4: 'Ecological Structure & Biodiversity ((birds, bees & trees))'

- Colding. (2007). 'Ecological land-use complementation' for building resilience in urban ecosystems. *Landscape and Urban Planning* 81, 46-55.
- Davis et al. (2011). Don't judge species on their origins. *Nature* 474, 153-154.
- Dearborn & Kark. (2010). Motivations for conserving urban biodiversity. *Conservation Biology* 24, 432-440.

- Goddard et al. (2010). Scaling up from gardens: Biodiversity conservation in urban environments. *Trends in Ecology & Evolution* 25, 90-98.
- Kurz & Baudains (2012). Biodiversity in the front yard: An investigation of landscape reference in a domestic urban context. *Environment and Behavior* 44,166-196.
- Lindemann-Matthies et al. (2010). The influence of plant diversity on people's perception and aesthetic appreciation of grassland vegetation. *Biological Conservation* 143, 195-202.
- McIntyre. (2000). Ecology of urban arthropods: A review and a call to action. *Annals of the Entomological Society of America* 93, 825-835.
- Nassauaer. (1995). Messy ecosystems, orderly frames. *Landscape Journal* 14,161-170.
- Packer et al. (2016). Bees of Toronto. City of Toronto Biodiversity Series, Toronto.
- *Tallamy, D. (2007). *The vital new role of the residential garden*. In: *Bringing Nature Home*. Timber Press, Oregon.

Lecture 5: Ecological Integrity & Restoration

- Berman et al. (2008). The cognitive benefits of interacting with nature. *Psychol. Sci* 19, 1207-1212.
- Grove et al. (2014). An ecology of prestige in New York City: Examining the relationships among population density, socio-economic status, group identity, and residential canopy cover. *Environmental Management* 54, 402-419.
- McHale et al. (2015). The new global urban realm: Complex, connected, diffuse, and diverse social-ecological systems. *Sustainability* 7, 5211-5240.
- Mok et al. (2014). Strawberry fields forever? Urban agriculture in developed countries: A review. *Agronomy for Sustainable Development* 34, 21-43.
- Nasr et al. (2010). Scaling-up Urban Agriculture in Toronto. Available at: <http://metcalffoundation.com/wp-content/uploads/2011/05/scaling-urban-agriculture.pdf>.
- PlaNYC. (2013). Progress Report. New York City, NewYork.

Lecture 6: 'Green Infrastructure - Nature, Design & Maintenance' (Simon)

- Dietz. (2007). Low impact development practices: A review of current research and recommendations for future directions. *Water, Air and Soil Pollution* 186: 351-363.
- Oberndorfer et al. (2007). Green roofs as urban ecosystems: Ecological structures, functions, and services. *BioScience* 57, 823-833.
- Torrance et al. (2013). City of Toronto Guidelines for Biodiverse Green Roofs. Available at: <http://www.toronto.ca/greenroofs>.
- Tzouloas et al. (2007). Promoting ecosystem and human health in urban areas using green infrastructure: A literature review. *Landscape and Urban Planning* 81,167-178.
- *Williams et al. (2014). Do green roofs help urban biodiversity conservation? *Journal of Applied Ecology* 51, 1643-1649.