Urban Forestry 200 – Urban Forests and Well-Being

Year/Term: 2016W

COURSE OVERVIEW:

Tuesdays: 1.5-hour lecture; Thursdays: 1.5-hour seminar

Instructors: Matilda Van Den Bosch
matilda.vandenbosch@ubc.ca

Sara Fryer Barron
sara.fryer.barron@gmail.com

Teaching Assistant: Emily Rugel
emilyrugel@gmail.com

Office hours, location, and contact information to be distributed in class.

COURSE DESCRIPTION:

Urban Forestry 200 provides an introduction to the various human health benefits provided by urban forests. The course will explore basic relationships between urban residents' health and well-being and surrounding urban forests. Referring to the most common health issues of today, the course will demonstrate why urban forests are crucial public health assets of our cities. Through both lectures and seminars the course will address the theoretical context of relationships between nature and human health; explore the scientific evidence on physiological and psychological effects of nature exposure; outline contemporary public health issues and challenges; and demonstrate how various pathways, such as increased physical activity and improved air quality, can result in health benefits from urban forests. The course emphasizes the value of working across sectors, with a focus on the connections between urban ecosystem functioning and human health over the life course.

COURSE OBJECTIVES:

This course exposes students to the breadth of knowledge linking urban forests and human health and well-being. The course will develop a basic understanding of fundamental human health concepts and their linkages to the field of urban forestry. A basic premise of the course curriculum is that healthy urban ecosystems are necessary for human health now and in the future.

Concepts discussed will include, for example, the role of urban trees in:

- Reducing the burden of chronic, lifestyle-related diseases;
- Improving mental and physical health and well-being;
- Promoting physical activity and reducing stress;
- Contributing to social cohesion in cities;
- Improving urban air and water quality for improved human health;
- Reducing heat- and noise-related diseases in cities;
- Improving children's opportunities for healthy development; and
- Providing environmental education.

LEARNING OUTCOMES:

By the end of the course, students will be able to:

- Report on major contemporary health issues and how urban forests can contribute to alleviating some of these problems;
- Explain the psychological and physiological mechanisms behind the benefits of human contact with nature;
- Discuss the relationship between well-functioning and equally distributed urban forests and health for all;
- Identify sociobehavioural pathways and ecosystem services linking urban forests to various (specific) health outcomes;
- Understand the basics of how urban forests can be designed and planned to contribute to human well-being;
- Describe historical precedents and case studies of urban forests designed for human health; and
- Communicate how urban forest designs can contribute to human well-being and describe the scientific evidence supporting this approach to a wide range of audiences.

COURSE REQUIREMENTS:

Pre-requisite: Urban Forestry 100

COURSE PROCESS AND EXPECTATIONS FOR ALL CLASS MEMBERS

Class members are expected to attend regularly and to come to both lectures and seminars prepared to actively participate. In particular, students should complete all required readings prior to the assigned deadlines and contribute to the online forum in a substantive manner. There is an expectation that differing opinions, analysis, and experiences will be discussed in a respectful manner and that such exchanges contribute to the learning of all.

ASSIGNMENTS:

ASSIGNMENT #1 – Urban Forest Analysis (15%)
For the first assignment, students will prepare a 6- to 8-page report (~1,000 words; maximum 1,200 words and graphics) on one of four assigned local urban forest typologies.

This review will form the first part of a three-part course-long assignment.

ASSIGNMENT #2 – Urban Forest Assessment (20%)
Students will assess the urban forest in terms of its contribution to local residents' health and well-being. Students are encouraged to think critically about how the urban forest contributes to, or detracts from, the health and well-being of nearby residents.

Students will be graded on their ability to critically examine the design and management of an urban forest, as well as on the quality of their written and graphic communication.

ASSIGNMENT #3 – Urban Forest Design Group Project (30%)
Building on the first assignment, students will work in groups to re-imagine their chosen forest with a focus on a current issue related to urban residents' health and well-being. Students are encouraged to present their designs in creative formats. Designs will be graded on the student's demonstration of comprehension of connections to human well-being, on the relative success of their resulting design, and on their graphic and written communication.

Midterm Exam (15%)

Seminar Participation (20%)
Weekly seminar discussion sessions will explore the public health benefits of green space planning and management. Some seminars will take place outdoors around the UBC campus, depending on the weather. Students will be graded based on their attendance; seminar workbook completion; participation in reading quizzes; contribution to discussions; and feedback provided to peers during the final group presentations.

Course Schedule

	Tuesday	*Lecture*	**Thursday**	*Seminar*
Week One	January 3	Healthy Planet Healthy People	January 5	Urban forest types
Week Two	January 10	The global burden of disease and relation to the environment	January 12	Site Analysis
Week Three	January 17	Scientific theories on nature and health Green care	January 19	Meeting needs of multiple populations
Week Four	January 24	Environmental Behaviour	January 26	Social dilemma game **READINGS QUIZ**
Week Five	January 31	Pathways I: Stress recovery	February 2	Stress recovery exercise **ASSIGNMENT ONE DUE**
Week Six	February 7	Pathways II: Social cohesion	February 9	Social life of small urban spaces
Week Seven	February 14	Pathways III: Physical activity	February 16	**MIDTERM**
Week Eight	February 21	Reading Week	February 23	Reading Week
Week Nine	February 28	Pathways IV: Health equity	March 2	Uncommon ground **ASSIGNMENT TWO DUE**
Week Ten	March 7	Pathways V: Immunocapacity	March 9	**Design Charrette**
Week Eleven	March 14	Putting it all together	March 16	Drawing session
Week Twelve	March 21	Ecosystem services	March 23	Final project critique session
Week Thirteen	March 28	Urban green and health in policy and practice	March 30	**Student Design Fair**

REQUIRED AND RECOMMENDED READINGS

All required readings will be posted to the course website weekly.

Core required readings:

Steg, L. et al. 2013. Environmental Psychology – An introduction. Wiley-Blackwell. *Chapters 9.*

Wolf, K. Outside our Doors: The benefits of cities where people and nature thrive.

Wolf, K. Nature's Riches: The Health and Financial Benefits of Nearby Nature.

WHO 2016. Urban green spaces and health - a review of evidence. World Health Organization, European Regional Office, Copenhagen, Denmark. *Chapter 1-3*

Browning, W.D., Ryan, C.O., Clancy, J.O. (2014). 14 Patterns of Biophilic Design. New York: Terrapin Bright Green llc.

Chapter One: Montgomery, Charles. 2013, Happy City. Farrar, Straus and Giroux

Recommended readings on specific topics:

- Healthy planet, healthy people:
  - van den Bosch, M., Cave B., Kock R., Nieuwenhuijsen M. 2016. Healthy Planet Healthy People. UNEP/UNECE 2016. GEO-6 Assessment for the pan-European region. United Nations Environment Program, Nairobi, Kenya.
- Social cohesion:
  - Cohen, S. 2004. Social relationships and health. Am Psychol, 59, 676-84.
  - Peters, K., Elands, B. & Buijs, A. 2010. Social interactions in urban parks: Stimulating social cohesion? Urban Forestry & Urban Greening, 9, 93-100.
- Physical activity:
  - Godbey, G & Mowen, A. 2010. The Benefits of Physical Activity Provided by Park and Recreation Services: The Scientific Evidence. National Recreation and Park Association, Department of Recreation, Park and Tourism Management, The Pennsylvania State University.
- Stress
  - Sapolsky, R. 2004. "Why zebras don't get ulcers", p. 1-15
  - Ward Thompson, C., Roe, J., Aspinall, P., Mitchell, R., Clow, A. & Miller, D. 2012. More green space is linked to less stress in deprived communities: Evidence from salivary cortisol patterns. Landscape and Urban Planning, 105, 221-229.
- Health inequalities
  - Mitchell, R. & Popham, F. 2008. Effect of exposure to natural environment on health inequalities: an observational population study. The Lancet, 372, 1655-1660.

Recommended readings on specific topics (continued):

- Ecosystem services: air quality, heat stress, and noise
  - McDonald et al. 2016. Planting healthy air: A global analysis of the role of urban trees in addressing particulate matter pollution and extreme heat. The Nature Conservancy.
  - Dzhambov, A. & Dimitrova, D. 2014. Urban green spaces′ effectiveness as a psychological buffer for the negative health impact of noise pollution: A systematic review. Noise and Health, 16, 157-165.
- Immune system function
  - Rook, G. A. 2013. Regulation of the immune system by biodiversity from the natural environment: An ecosystem service essential to health. Proceedings of the National Academy of Sciences, 110, 18360-18367.
- Environmental behaviour
  - Annerstedt van den Bosch, M. & Depledge, M. 2015. Healthy people with nature in mind. BMC Public Health, 15, 1232.
- Diseases and health outcomes related to urban forests
  - Dadvand, P., Nieuwenhuijsen, M. J., Esnaola, M., Forns, J., Basagaña, X., Alvarez-Pedrerol, M., Rivas, I., López-Vicente, M., De Castro Pascual, M., Su, J., Jerrett, M., Querol, X. & Sunyer, J. 2015. Green spaces and cognitive development in primary schoolchildren. Proceedings of the National Academy of Sciences, 112, 7937-7942.
  - Gascon, M., Triguero-Mas, M., Martínez, D., Dadvand, P., Rojas-Rueda, D., Plasència, A. & Nieuwenhuijsen, M. J. 2016. Residential green spaces and mortality: A systematic review. Environment International, 86, 60-67.
  - Donovan, Geoffrey H, David T Butry, Yvonne L Michael, Jeffrey P Prestemon, Andrew M Liebhold, Demetrios Gatziolis, and Megan Y Mao. 2013. "The Relationship Between Trees and Human Health: Evidence from the Spread of the Emerald Ash Borer." American Journal of Preventive Medicine 44, no. 2:139–45.
  - Hartig, T., Mitchell, R., De Vries, S. & Frumkin, H. 2014. Nature and Health. Annual Review of Public Health, 35, 207-228.
- Urban green and health in policy and practice
  - van den Bosch, M. & Nieuwenhuijsen, M. 2016. No time to lose – Green the cities now. Environment International.

Additional recommended readings:

Dwyer, J.F., H.W. Schroeder, P. H. Gobster. 1994. The Deep Significance of Urban Trees and Forests. In R.H. Platt, R.A. Rowntree, P.C. Muick (editors), The Ecological City: Preserving & Restoring Urban Biodiversity. Amherst: University of Massachusetts Press.

Kuo, Francis E. "The Role of Arboriculture in a Healthy Social Ecology." Journal of Arboriculture 29, no. 3 (May 2003): 148–55.

Matsuoka, Rodney H., and William Sullivan. “Urban Nature: Human Psychological and Community Health.” In The Routeledge Handbook of Urban Ecology. Taylor and Francis, 2010.

van den Bosch, M. 2016. Natural Environments Health and Wellbeing. Ed. Shugart, H. Oxford Research Encyclopaedias, Environmental Science.

Macdonell, M., Hertzberg R., Gernes R., Rice G., Wright J. M., Beresin G., Miller T., Africa J., Donovan G., Hipp A. J., Hystad P., Jackson L., Kondo M., Michael Y., Mitchell R., Nieuwenhuijsen M., Ryan P., Sullivan W., van den Bosch M. 2016. Estimating Greenspace Exposure and Benefits for Cumulative Risk Assessment Applications. EPA/600/R-16/025. U.S. Environmental Protection Agency, Cincinnati.

Prescott, S. L. & Logan, A. C. 2016. Transforming Life: A Broad View of the Developmental Origins of Health and Disease Concept from an Ecological Justice Perspective. Int J Environ Res Public Health, 13.

Recommended websites:

EnviroAtlas Eco-Health Relationship Browser

Green Cities: Good Health