

**E422/S422/E522 UFM, Sp 2018 – Syllabus Part 2 - Course Calendar – 2018 final  
Topics, Readings & Homework - Highlighted items are helpful reading guidance**

**Week 1 – Introduction to Urban Forests & Urban Forestry** – Pretest; Course/Instructor intro; Review Syllabus, Course Calendar, Themes & Canvas; Blogs: Treebune, The Nature of Cities; Intro to urban forests, arboriculture & urban forestry; Brief historical review; Urban land use trends

**Reading assignments:**

History of Urban Forestry (Focus: urban tree mgmt. history, particularly Northeastern USA)

Ricard, RM. 2005. Shade Trees and Tree Wardens: Revising the History of Urban Forestry. J. For. 103(5): 230-233.

Gerhold, HD. 2005. The Origins of Urban Forestry, Letter to the Editor. J. For. 103(7): 369-370.

Introduction to Urban Ecology, UF's and Urban Forestry (Three foci – USA history, Europe comparison, Urban Ecology-UFM connections)

UFM Introduction – 3 media stories (discussed Day 1), 7p

Konijnendijk, C., et.al. 2006. Defining urban forestry – A Comparative Perspective of North America and Europe. Urban Forestry & Urban Greening (UF&UG) 4:93-103.

Fischer BC 2017. Defining urban ecology and connection to urban forestry. IAA Newsletter (Winter), 14-15. Article reprinted in Agricultural Research & Technology, Open Access Journal ISSN 2471-6774 Opinion Vol 2(4)1p. DOI:10.19080/ARTOAJ.2017.04.555637

Current Trends in Land Use (Focus – land use change research; urbanization/Anthropocene)

Rudel, TK, et al. 2005. Forest transitions: towards a global understanding of land use change. Global Environmental Change 15: 23-31.

Nowak, DJ, Greenfield, EJ. 2012. Tree and Impervious Cover Change in U.S. Cities. UF&UG 11:21-30.

See Assignment Folder – Anthropocene Readings - Browse as necessary to make sure you are up to speed on this concept per UFM.

**Discussion Paper #1 – Welcome to UFM's "What's in the News" Writing Assignment –**

Informative memo to the Instructor (1-2 pages in length), explanatory figures are extra and encouraged if needed as attachments; memo must include at least two citations (use links to news stories, etc.) as supporting documents. At least one of the two or more citations should be recent (2017-18). The urban trees/forest storyline is from a US city of your choice. The urban forest storyline can be a about controversy, an on-going situation, celebration or whatever and can be from a biophysical (trees/ecosystem), social (community) or governance (institutions) perspective. The informative or report format should begin with clearly identifying the city and a description of the situation you are writing about. Next should be clear description of the story that's developing or has just concluded. Finally, close the paper with a paragraph discussing whether the story has really ended or what you believe the near future storylines might be (2018-19). You are writing as a memo to the instructor. Upload file (file name as follows: last name, first name, DP1) to Canvas Assignment #1. If you are unsure how to prepare and write a memo, search the Writing Tips Folder or search using phrases like memo writing, how to write a good memo, etc. Due 11:15am Thursday, January 18, 30 pts.

**Week 2 – Sustainable Urban Forests as Social-Ecological Systems (SES's)** – Defining the urban forest from several perspectives; Urban forest sustainability model/metrics; Introduction to institutions, resilience & robustness thinking; Urban trees/forests - public goods or common pool resources?; See "About the Bloomington Urban Forestry Research Group" (2 pages)

<https://urbanforestry.indiana.edu/index.html>

**Reading Assignments:**

Sustainable Urban Forests and SES's (Course theme; Clark, et al., benchmark UFM publication!)

Clark, JR, et al. 1997. A Model of Urban Forest Sustainability. J. Arboriculture 23(1):17-30.

Kenney, WA, et al. 2011. Criteria and Indicators for Strategic Urban Forest Planning and Management. *Arboriculture & Urban Forestry (A&UF)* 37(3):108-117.

Ostrom, E. 2009. A General Framework for Analyzing Sustainability of Social- Ecological Systems. *Science* 325: 419-422.

Intro to Sustainability & Urban Forestry (a mixture of simple urban forest sustainability "metrics")  
American Forests - Setting Urban Tree Canopy Goals, 2p. See <http://hpi.green.com/tag/american-forest/>.

Arbor Day Foundation. 2015. Tree City USA Standards, 2p. ADF website

Ball J, S Tyro. 2016. Diversity of the Urban Forest: We need more genera, not species. *Arborist News (AN)* 25(5): 48-53.

Leff, M. 2016. The Sustainable Urban Forest: A Step-by-Step Approach. Part II, p 4-11.

Santamour, F. 1990. Trees for Urban Planting: Diversity, Uniformity, and Common Sense. 10p.

**Week 3 - The Benefits/Cost of Urban Trees/Urban Forests – Themes:** Perceptions & reality, correlations & causation, ecosystem services/disservices; See Human Dimensions of Urban Forestry & Urban Greening at [www.naturewithin.info](http://www.naturewithin.info) (K Wolf's U. Washington website); National Tree Benefits Calculator <http://www.treebenefits.com/calculator/>

**Reading Assignments (Selected; many more available in vibrant, growing research field)**

Donovan, GH, et al. 2012. Comment on "Green Space, health inequity, and pregnancy". *Environmental International (Correspondence)* 39:133.

Donovan, GH. M. Oliver. 2015. Exploring Connections between Trees and Human Health. U.S.D.A. Forest Service, Pacific Northwest Research Station, *Science Findings* 158. 6p.

Hanson, et al. 2016. Human Health & Social Benefits of Urban Forests. Dovetail Partners. 13p.

Hauer, RJ, JM Vogt, BC Fischer. 2015. What is the cost of not maintaining the urban forest? *AN* 24(1): 12-17.

Lyytimäki, J, M Sipila. 2009. Hopping on one leg –The challenge of ecosystem disservices for urban green management. *UF&UG* 8:309-315.

McDonald et al. 2016 (Ex Sum). Planting Healthy Air: A global analysis of the role of urban trees in addressing particulate matter pollution and extreme heat. The Nature Conservancy. 12p.

Nowak, DJ. et.al. 2007. Oxygen Production by Urban Trees in the United States. *A&UF* 33(3): 220-226.

Wolf KL. 2013. Why Do We Need Trees? Let's Talk about Ecosystem Services. *AN* 22(4): 32-35.

**DP #2 – Introduction to Urban Tree Canopy Analysis Writing Assignment, 750-100 words.**

Review the Tree Canopy Report: Indianapolis-Marion County, IN and identify three important takeaways (conclusions, impressions or action points resulting from reading the report). The takeaways might relate best to city-county officials or Keep Indianapolis Beautiful or the media or neighborhoods. The format of the discussion paper is as follows: Introduction describes how you determined (criteria, etc.) the three important takeaways and then displays the three takeaways as bullet points. Then, under each bullet point prepare a tightly written sections explaining the importance of each takeaway. Finally, for closure consider the combined City of Bloomington/IUB campus, which has not yet done such a canopy analysis but the City is planning to contract on in 2018-19, and write and defend two really important question you would want addressed locally when the UTC inventory/assessment is conducted. Upload file (last name, first name, DP2). Due 11:15 am Tuesday, Feb. 13, 40 pts.

**Week 4 – Urban Tree Canopy (UTC) and other Data Analysis** – What is UTC & how is it analyzed; Street tree inventories; Perceptions & reality regarding UF data; Use and abuse of UTC data as management tool; Guest speakers Bob Neary, Conservation Information Manager, IN Chapter, The Nature Conservancy & Karl Selm, GIS Analyst, Keep Indianapolis Beautiful.

Avins, M. 2013. Baltimore's Forest Patches: Emerald assets for ecosystem services. 34p.  
<http://baltimoregreenspace.org/downloads/ForestPatchesWeb.pdf>

Bond, J. 2017. Tree Inventories. AN 26(6):12-17.

Grove, M., O'Neil-Dunne, J. 2011. Urban Tree Canopy Analysis Helps Urban Planners with Tree Planting Campaigns. USFS NRS Res. Rev. No. 13 (Summer 2011), 6p.

Nowak, DJ. 2012. A Guide to Assessing Urban Forests. NRS-INF-24-13, 4 p.

O'Neil-Dunne, J. 2015 (December draft). Tree Canopy Report: Indianapolis-Marion County, IN. USFS, University of Vermont Spatial Analysis Lab, 12p. (2 items, includes 1-page summary)

Leff, M. 2016. The Sustainable Urban Forest: A Step-by-Step Approach. Part III-IV, p 12-27

**Week 5 – National-State-Local Players in Urban Forestry** (general overview, "chalk talk" by Burney) – State/National players summarization & how things operate for urban forestry funding for programs & research federal>state>local (think neighborhood!) level; Guest speaker - Bill Kinicus, Indianapolis City Forester

**Reading Assignments** – Burney will give a chalk talk on the whiteboards of the US national-state-local players in urban forestry - no reading assignment, nothing substantially adds to the presentation/discussion. Burney will lead a discussion of the Indianapolis City Urban Forestry Plan (really a report) prepared by Davey Resource Group - Indianapolis MP is below in preparation for Indy City Forester presentation. See thoughts from Indy City Forester below.

Note from Bill Kinicus, Indianapolis City Forester:

"It would be good for them to "surf" around our UF website and check out some of the links found there: <http://indy.gov/eGov/City/DPW/Residential/Urban%20Forestry/Pages/Urban%20Forestry%20Home.aspx> (Links to an external site.)Links to an external site.. We have a few FAQ pages within the website that give glimpses into some of our policies.

More importantly, the students can also read the Management Plan that Davey Resource Group created based on DRG's analysis of the recently completed street tree inventory (it includes an executive summary). I will attach that here. Bear in mind that the management plan that DRG created is basically their recommendations for us, and many of the ideas are not achievable by our program. Some of the recommendations are far more aggressive than our funding sources can support, for example. Still, the analysis is the best snap shot of what is going on with the City's street trees. And in the absence of our own official master plan, this analysis and management plan document is the next best thing."

Read Overview below (from Indianapolis Urban Forestry website) before Thursday presentation/discussion with Indianapolis City Forester

Overview of Indianapolis Urban Forestry, 1p (read before Thursday Guest Speaker)

Indianapolis Urban Forestry Master Plan by Davey Resource Group, 46p + Appendices

**Week 6 – Community Tree Planting Campaigns** (Selected regional/city greening initiatives); NGO's – tree planting & otherwise; KIB presentation – Nate Farris, Molly Wilson & Ned Brockmeyer, review <http://www.kibi.org/programs/overview/>, click on Planting Trees & Youth Program

### **Reading Assignments:**

Roman, LA. 2014. How Many Trees Are Enough? Tree Death and the Urban Canopy. Scenario Journal 04. 8p

Roman, LA, et al. 2017. Best Practices for Yard-Tree Distribution Programs. AN 26(5): 30-35

McPherson, G., Young, R. 2010. Understanding the Challenges of Municipal Tree Planting. AN 19(6):60-62

### **DP #3 – Developing a Model Neighborhood Urban Forest Plan, team assignment (3-4 students/team).**

The KIB Tree Team has asked our class to help develop a model urban forest plan at the neighborhood level, which they can begin utilizing with each neighborhood they work with in a given year (maybe 10-20 NH's/yr.). The goal is to have a short two-page plan, think small brochure or two-sided item in size (i.e. something very simple and straightforward). Remember, KIB wants the plan to be locally driven regarding goals and things to accomplish so that progress is made. KIB's role is to provide guidance to the neighborhood as well as some standardized data that the NH can reference or utilize, as they might need. So, teams need to think carefully about how to present data in a very useful and easily understood format. The final team presentation will be a poster (see a suggested model below) which will be presented to the class. See the Writing Tips Folder for how to construct a poster presentation. For your information, the City of Bloomington is also interested in using this format for the over 40 organized neighborhoods and my recent conversations with Davey Resource Group and Bartlett Tree folks indicates they are also interested. Upload file – the poster (last names of each team member, DP#3). Due 11:15 am Tues., Feb. 27, 40 points per person.

**Week 7 – Municipal Urban Forestry & Tree Law** - Tree ordinances/boards/planning; UF disturbance planning; Environmental Change; Institutions “governing” urban trees; Tree law talk

### **Reading Assignments:**

Municipal Urban Forestry (see Municipal Forestry Folder)

Brandt, LA, et al. 2017. Adapting Urban Forests to Climate Change in the Chicago Region. Arborist News 26(6):34-38

Burban L. 2013. Tree Emergency Plan Worksheet.

Johnson G, et al. 1990. Four Phases of a U&CF Program. White Paper, 1p.

National Arbor Day Foundation. 2007. Sample City Tree Ordinance. 1p.

Mincey, SK, BC Fischer. 2013 (April). Solutions for Sustainable Urban Forest Governance and Management. IUB SPEA Insights, 4p.

**(Compare two plans for class discussion)**

Orndorff, R. 2005. Master Street Tree Plan. City of Rockville Md. 1p.  
Bloomington Urban Forestry Plan (2014-2019) 1p.

The City of Bloomington Tree Care Manual: A Handbook for the Care of Urban Trees, 2017, 28p.  
[https://issuu.com/bloomingtonparks/docs/tree\\_care\\_manual\\_4th\\_edition\\_0117](https://issuu.com/bloomingtonparks/docs/tree_care_manual_4th_edition_0117)

Urban trees public goods or CPR's? (See PPT used in class.)

Hardin, G. 1968. The Tragedy of the Commons. Science 162:1243-1248 (specifically read section “Tragedy of the Freedom in a Common” and ponder public spaces and trees).

USFS. 2009. Understanding and Caring for New York City's Urban Forest. USFS NRS Research Review, USFS No. 8 (Autumn 2009), 6p.

Trees and the Law (Review prior to Tree Law Talk presentation – See Tree Law Folder for assignment and guide to reading articles and cases)

Parr, et al. 2010. Boundary Line Trees – Who Owns Them? 1p.

Beering, PS, Scott, JR. 2006. Premise Liability and Your Trees. 13p.

Stephenson, CE. 2004. Tree Law: More complicated And Plentiful than Many Lawyers Think. *Lawyers Weekly USA*. 8p.

Light Staff. 2007. Trees: what's your liability? *Point Reyes Light*, 3p.

Lewis, M. 'Arborcide' and 4 other nasty tree fights. *MSN Real Estate*, 5p.

#### **Three Cases:**

May v. George, 910 N.E.2d 818 (2009). From WestlawNext 2012. 7p.

Ortiz v. Jesus People, U.S.A., 405 Ill.App.3d 967 (2010). From WestlawNext 2012. 9p.

Stackhouse v. Royce Realty and Management Corp., 2012 IL App (2d) 110602 (2012). From WestlawNext 2012, 10p.

**Week 8 – Midterm Exam Week. Catch-up day on Tuesday and Exam on Thursday, March 1.**

**Note Weeks 9-10 - Schedule subject to change, per guest speakers/weather/field trips**

**Week 9 & 10 Tree Inventory and Assessment** – Field trips (2) for street tree inventory training & exercise; DP #4 (UG team project; see in-field handout); Guest lecture by Sarah Widney, Craft Lab Mgr., Planted tree survival, growth and i-Tree; i-Tree software <http://www.itreetools.org/>

### **Spring Break – March 12-16!!!!**

**Reading Assignments** - See Week 9 & 10 folder for handouts, etc., for field exercises, etc. Bond, J. 2017. Tree Inventories. *AN* 26(6):12-17.

ISA Basic Tree Risk Assessment Form, 2p

Nowak, D, et al. 2015. Simple street tree sampling. *A&UF* 41(6):346-354.

Widney, SE, et al. 2016. Tree mortality undercuts ability of tree-planting programs to provide benefits: results of a three-city study. *Forests* 7(65), 21p.

**Discussion Paper #4** – street tree inventory, 3-4 person teams. **Details at the field experience!**

**Weeks 11 – Introduction to Tree Biology** (Understanding basic tree biology)

**Reading Assignments:** (Review Tree Owner's Manual for Next 4 Weeks of Class)

Chaney WR. 1993. *Acer saccharinum* – Silver Maple: the "Coyote of Trees." *Arbor Age* 13(4):31.

Johnson J, et al. 2010. Tree Owner's Manual for the Northeastern and Midwestern U.S. USDA FS NA S&PF, NA-FR-01-10, 40p.

USDA. 2006. How a Tree Grows. FS-32, 8p.

Class Case Study Discussion (Review before PowerPoint lecture in class)

Culley, TM, NA Hardiman. 2007. The Beginning of New Invasive Plant: A History of the Ornamental Callery Pear in the United States. *BioScience* 57(11); 956-964.

**Week 12 - Tree Care and Management** – Pruning, risk rating, etc.; Urban tree health management; EAB and other pest case studies

**Reading Assignments:**

UF Tree Care Myths Summary by B.C. Fischer. 2017. 3p.

Pruning (Major management activity by city foresters)

Clark, JR, N Matheny. 2010. What does research tell us about the practice of pruning in arboriculture? *AN* 19(1):41-44.

Purdue Forestry and Natural Resources Extension has an excellent set of publications about pruning trees by Extension Specialist Lindsey Purcell – see <https://www.purdue.edu/fnr/extension/blog/2017/02/09/new-publication-tree-pruning-what-do-trees-think/>

Emerald Ash Borer (EAB) will be our thematic pest species for urban forest health mgmt.)

See National EAB website <http://www.emeraldashborer.info/about-eab.php>

See Indiana EAB <http://extension.entm.purdue.edu/EAB/>

Aukema, et al. 2011. Economic Impacts of Non-Native Forest Insects in the Continental United States. *PLOS ONE* 6(9): e24587. doi:101371/journal.pone.0024587.

Sadoff, C, et al. 2017. Tools for Staging and Managing Emerald Ash Borer in Urban Forests. *A&UF* 43(1): 15-26.

**Week 13 - Tree Industry Review** - Economic impacts, trends, job opportunities; Field Day (April 12) with Davey Tree Expert Company/Davey Resource Group – Mark Noark, Aren Flint, etc.

**Reading Assignments:**

Review Davey Tree website at <http://www.davey.com/> before Thursday field experience!

Trends in the Green Industry and Tree Care compiled by B.C. Fischer, December 2015

Schmidlin, TW. 2008. Human fatalities from wind-related tree failures in the United States, 1995-2007. *Nat. Hazards, Orig. Paper*. DOI 0.1007/s11069-008-9314-7, 13p.

ISA ArbNew Skiera Column. 2014. Time to Step Up.

**Weeks 14 - Tree Planting** – Tree selection (& invasive spp.); Rules-of-thumb; Right Tree, Right Place; Planting/tree care field demo, B'ton City Forester Lee Huss (April 19)

**Reading Assignments:**

The City of Bloomington Tree Care Manual: A Handbook for the Care of Urban Trees, 2017, 28p. [https://issuu.com/bloomingtonparks/docs/tree\\_care\\_manual\\_4th\\_edition\\_0117](https://issuu.com/bloomingtonparks/docs/tree_care_manual_4th_edition_0117)

Struve, DK. 2009. Tree Establishment: A Review of Some of the Factors Affecting Transplant Survival and Establishment. *A&UF* 35(1): 10-13.

**Week 15 – Graduate Research Paper Presentations, Team Case Study Presentation(s), Course closure & evaluation; Final Exam for UG's, Graduate Research Papers**