

Forest Resources 3501
Arboriculture
Spring Semester, 2009

Instructor: Gary Johnson, Professor of Urban and Community Forestry, Department of Forest Resources. Office: 101E Green Hall, 612-625-3765, email address: johns054@umn.edu.

Office Hours: By appointment.

Text: Arboriculture: Integrated Management of Landscape Trees, Shrubs, and Vines. Richard W. Harris, James R. Clark, Nelda P. Matheny. 4th edition.

Time and Room: Tuesdays and Thursdays, 1:15-2:30 p.m., Room 19 Green Hall.

Messages and General Information: As per the policy of the University of Minnesota, I will stay in touch with you through email...no phone calls. **Make certain that I have your current and correct email address** on the first day of classes. Any schedule changes, any announcements, anything will be relayed via email. Check yours frequently.

*Second, and very important, the best way to learn/teach Arboriculture is to combine in-class discussions with outdoor reality checks. This is Minnesota. No one knows what the weather will bring. However, expect that almost every day will offer us an opportunity to take a stroll on the campus to reinforce materials in the classroom. If it's cold, wear warm clothing. If it's wet, wear water-repellent clothing or bring an umbrella. Always have a small notebook with you that can be carried in your pocket or backpack. **Everything that is discussed, pointed-out, referred to on the outdoor walks is study material for the exams. It is your responsibility to take notes and make sure that you have everything. I do not write these notes up for you and put them on a web site.***

Exams and Assignments:

Hourly Exams (2)	@ 100 points	200 points
Final Exam	@ 100 points	100 points
Quizzes (10)	@ 35 points	350 points
Written Reports (5)	@ 40 points	200 points
Written Exercise (1)	@ 150 points	150 points
	Total Points	1000

Grading Schedule:

University Grading Standards:

- A Achievement that is outstanding relative to the level necessary to meet course requirements.
- B Achievement that is significantly above the level necessary to meet course requirements.

- C Achievement that meets the course requirements in every respect.
- D Achievement that is worthy of credit even though it fails to meet fully the course requirements.
- S Achievement that is satisfactory, which is equivalent to a C- or better.
- F (or N) Represents failure (or no credit) and signifies that the work was either (1) completed but at a level of achievement that is not worthy of credit or (2) was not completed and there was no agreement between the instructor and the student that the student would be awarded an I.
- I (Incomplete) Assigned at the discretion of the instructor when, due to extraordinary circumstances, e.g., hospitalization, a student is prevented from completing the work of the course on time. Requires a written agreement between instructor and student.

Academic Dishonesty

Academic dishonesty in any portion of the academic work for a course shall be grounds for awarding a grade of F or N for the entire course.

Credits and Workload Expectations

For undergraduate courses, one credit is defined as equivalent to an average of three hours of learning effort per week (over a full quarter) necessary for an average student to achieve an average grade in the course. For example, a student taking a three-credit course that meets for three hours a week should expect to spend an additional six hours a week on coursework outside the classroom.

Arboriculture Grading Scale:

- A = 900-1000 points.
- B = 850-899 points.
- C = 750-849 points.
- D = 650-749 points.
- F = less than 650 pts.

Course Outline

<u>Date:</u>	<u>Topic:</u>	<u>Reading Assignment</u>
Jan. 20	Intro. to arboriculture. Current issues in arboriculture. The tree as a system. Chapters 1 and 2.	
Jan. 22	Tree biology: How trees grow, how they die, and everything in between. Chapter 2 and “Water Movement in Trees,” by Kim Coder. The article by Coder will be sent electronically as an attachment.	
Jan. 27	Tree biology: Root systems. Horizontal and vertical limits; primary, secondary, tertiary roots; mycorrhizal, actinorhizal, nodular roots. Chapter 2 and the article “Mycorrhiza and Salt Tolerance of Trees,” which will be sent electronically. Quiz 1.	
Jan. 29	Consulting and Municipal Arboriculture as a profession. Guest Speakers. Quiz 2.	
Feb. 03	Tree morphology: branch attachments, tree forms, CODIT, the function of bark, and anatomy of a woody perennial. Chapter 2 and the article “Compartmentalization Today,” by K. Smith, which will be sent electronically.	
Feb. 05	Tree and shrub selection: Analyzing the site. Chapters 3 and 4. Quiz 3.	

- Feb. 10** **EXAMINATION ONE. Materials from 1-20 through 2-05.**
- Feb. 12 Tree and shrub selection: Matching plants to the site. Chapter 6.
Homework 1.
- Feb. 17 Pruning woody plants, Part I: Formative and maintenance pruning of trees.
Chapter 14 and the article “Pruning Wounds and Occlusion: A Long-
Standing Conundrum in Forestry,” by K. O’Hara, which will be sent
electronically.
- Feb. 19 Pruning woody plants, Part II: Rejuvenating and renewing shrubs and
other specialized pruning techniques. Chapter 14. Quiz 4.
- Feb. 24 Risk assessment - Evaluating risk potential. Chapter 16 and “Urban Tree
Risk Management,” which will be sent electronically. Homework 2.
- Feb. 26 Tree Health Issues: An examination of Manion’s decline spiral leading to
stress and strain. Chapter 2 and other references.
- Mar. 03 Trees and Tractors: Can they live together? Chapter 11.
- Mar. 05 Construction damage to trees: Trees vs. Streets, minimizing the effects of
gray on green. Chapter 11. Homework 3. Quiz 5.
- Mar. 10 Site Stresses: soil pH/drainage/nutrient content, mechanical injuries and
maintenance practices. Chapter 18.
- Mar. 12 Tree Health Issues. Biotic invaders: Oak wilt, emerald ash borer,
Dutch elm disease, Gypsy moth, Asian Long-horned beetle. Chapter 18;
also, read the publications that deal with these five causal agents on the
University of Minnesota Forest Resources Extension web site. Quiz 6.
- Mar. 17 Spring Break
- Mar. 19 Spring Break.
- Mar. 24** **EXAMINATION TWO. Materials from 2-12 through 3-12.**
- Mar. 26 Tree Health Issues. Biotic invaders: Two-lined Chestnut and Bronze birch
borer, Nectria and Eutypella cankers, Armillaria. Same reading
assignment as March 13, except read the publications that deal with these
five, new causal agents.
- Mar. 31 Stem Girdling Roots: causes, damage, prevention, treatments. Reading
assignment on the University of Minnesota, Forest Resources Extension
web site, Urban and Community Forestry folder, Stem Girdling Roots
publication by Hauer and Johnson. Homework 4.
- Apr. 02 Storm damage to trees: Prediction, Prevention, Treatment. Chapter 17
and U of MN Forest Resources Extension web site, Urban and Community
Forestry folder, everything on storm damage. Quiz 7.
- Apr. 07 Evaluating tree condition. In the field, so dress for it. Handed out
reference materials.
- Apr. 09 Key plants, Key problems: A Plant Health Care approach. Chapter 19.
- Apr. 14 Species diversity, invasive species and sustainable landscapes. TBA
- Apr. 16 Modifying the planting site. Engineered planting sites. Chapter 10.
- Apr. 21 Fertilizing, aerating, mulching, irrigation: intensive management for trees.
Chapters 7 and 12. Homework 5. Quiz 8.
- Apr. 23 Planting for Long-Term Health. Chapter 8.
- Apr. 24 *Arbor Day in Minnesota.*

- Apr. 28 Transplanting trees in the landscape. Moving large trees. Chapter 9. Quiz 9.
- Apr. 30 Working safely in the tree - ground to crown. Handed out references given in class.
- May 05 Root collar examinations in the field. This is a "dirty" class, so dress appropriately.
- May 07 Writing consulting reports: tree risk assessment, maintenance, appraisals. Quiz 10.

Written Exercise: 150 points.

- Topic: Dispel an Arboricultural Myth.
- You must submit the topic and outline for your paper by February 12. **If you miss this due date, you automatically start off with a maximum of 90% of the potential points for this assignment.**
- **Minimum of two edits.** No grade will be issued if not edited at least two times by the course instructor (G.Johnson). Edits by other individuals do not count. **If you don't have two edits completed by me, you automatically have no more than 80% of the potential points for this assignment.**
- Final electronic draft (accompanied by the two edited versions) due no later than April 23, 2009, 4:30 p.m. **If you do not make this deadline, you automatically receive 0% of the potential points for this assignment.**
- There are no exceptions to these due dates.

Minimum length for the written exercise:

- Four pages, double-spaced, 12 point font, 1.5 inch margins all around.
- Space for graphics may be included as part of this, but don't be ridiculous and try to weasel out of producing a paper that's worth more than an hourly exam.
- Written in "newspaper" style.
- References and sources must be acknowledged.

Quality. I penalize substantially for poorly written articles. No spelling or grammar errors are acceptable. If you turn in a final draft that has spelling or grammar errors, a minimum of 10% (a.k.a., one letter grade) will be deducted from the overall score.

Examples of arboricultural myths:

- planting trees deeper is better;
- pruning wounds should be painted;
- maples bleed when pruned in the spring;
- potentilla should be named the MN State shrub;
- trees heal when wounded;
- when in doubt...fertilize;
- boxelders are garbage trees;

- soil biostimulants are necessary for plant establishment
- most tree and shrubs problems are either diseases or insect pests
- emerald ash borer will eliminate ash trees from the landscape

Homework assignments. (Five). The homework assignments are designed to take approximately 2-4 hours to complete. If you're whipping them out in 15 minutes, expect to get (15 minutes divided by 120-180 minutes equals 8-12%) 8-12% of the point value for the homework. If you're taking 6-8 hours to do them, you're spending way more time than necessary, but you're probably going to get a perfect score.

Each assignment is worth 40 points, so in total, the homework assignments are worth the same as the hourly exams. Don't be foolish and throw these point away. The topics for the homework assignments are: 1) Plant selection for five sites; 2) Risk assessment of 4-6 campus trees; 3) A long-term maintenance schedule for a block of street trees; 4) Tree preservation plan for a developing property; 5) A Plant Health Care management plan for a residential property.

As per the syllabus, the homework assignments will be distributed and due one week later by the beginning of the class. Electronic submission of the assignments is acceptable. Being late is not completely acceptable. Homework assignments will be accepted late for up to three calendar days after the due date, with a penalty of 10% a day.

Quizzes.

- 10 of them.
- Each worth 35 points.
- Make-up quizzes available if your absence is a valid one **and you contact me before the quiz.** Going on vacation early, forgot about class, wasn't prepared, went home to mom and dad's house early for the weekend, forgot to email me that you were going to miss class are examples of unacceptable excuses.