

Trees and Shrubs

PBIO-248

Fall 2005, #05152, 4cr.

INSTRUCTOR

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OFFICE HOURS

By Appointment

TEACHING ASSISTANT

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REQUIRED TEXTBOOK AND SUPPLIES

Braun, E.L. 1989. The Woody Plants of Ohio. OSU Press, Columbus, OH.
Hand lens (10X) [available at local bookstores or online]

ADDITIONAL REFERENCES AND READINGS

Burns, R.M. and B.H. Honkala. 1990. Silvics of North America, Vol. 1-2. USDA Forest Service, Agricultural Handbook 654, Washington, DC.
(http://www.na.fs.fed.us/spfo/pubs/silvics_manual/table_of_contents.htm)
Grimm, W.C. 1983. The illustrated book of trees with keys for summer and winter identification.
(Available as an Ohio-U e-book for 2-hr online checkout. See Alice.)

STUDY AID WEB-SITE

Trees And Shrubs of Southeastern Ohio (<http://www.plantbio.ohiou.edu/trees/>)

SCHEDULING

Lecture & Lab: T & Th 13:10-16:00, Porter 301
Special Field Trip: Saturday, 1-October-2005 (please note on your calendars), Lake Catherine

LECTURE TOPICS

Introduction to taxonomy and nomenclature
Reproduction in woody plants
Habitat requirements of local woody plants
Commercial uses of local woody plants
Selected tree diseases (e.g., chestnut blight)

LABORATORY

The vast majority of course time will be spent outdoors and in the lab. Emphasis will be placed on both sight recognition of common species (knowledge of scientific names is required) and gaining experience in the use of keys to identify plants.
In order to take maximum advantage of agreeable weather, trips will mostly be unscheduled. Come to class prepared for fieldwork every day, with clothing and footwear appropriate for the weather. Decisions will often be made at the last minute whether or not a field trip will be taken. Some trips may be taken in spite of rainy or cold weather.
Willingness to walk several miles during the 3-hour class period is assumed. If you have any physical disability or health condition that would prevent you from participating in strenuous fieldwork, please talk with me about it during the first week of class.

EXAMINATIONS AND OTHER REQUIREMENTS

There will be three exams: two lab practicals (Oct. 11, Nov. 15) and a lecture final (Fri., Nov. 18 at 12:20 p.m.). In addition, there will be five or six field identification quizzes. A project (explained below) is due on Thursday, 10-Nov-2005.

<u>Basis for Grade:</u>	Project	15%
	Identification Quizzes	15%
	First Lab Practical	20%
	Final Lab Practical	30%
	Lecture Final	20%

Lab Practicals:

On both lab practicals, you will be tested on sight recognition of plants you have seen in the field or lab and on identification of unknowns using the key in your required text. You will be expected to know the scientific names. Any woody plant that has been pointed out in class is "fair game" for sight recognition on a practical or quiz. Therefore, I encourage you to collect twigs of each plant we examine as a study aid. There will be a review session before each practical.

Lecture Final:

In order to maximize field time during the warmer part of the quarter, most lectures will be presented during the second half of the course. There will therefore be no lecture midterm. The lecture final will cover the "formal" (i.e., indoor) lectures, required reading, and information presented in the field about habitat requirements of various woody species.

Academic Dishonesty: The penalty for cheating is failure of the course. The university policies regarding the student code of conduct and academic integrity are clearly and completely summarized at:

<http://www.cats.ohiou.edu/judiciaries/index.htm>.

Attendance:

Although there is no direct penalty for poor attendance, there will be quizzes during many class periods, and an unexcused absence will result in a score of 0 on the quiz.

Absences will be excused if they result from illness, death in the immediate family, religious observance, or involvement in University-sponsored academic activities. Other absences will be considered on an individual basis. Any absence, other than for illness or death in the family, must be cleared in advance.

It is very difficult to make up missed class sessions because most sessions take place in the field. Lab practicals are a particular problem because the fresh plant material on which you are tested is often too wilted to identify within a few hours after the end of the practical. For this reason, you cannot make up a lab practical or quiz. However, if the exam or quiz was missed for a legitimate reason such as illness, it will not count against you. Your course grade will be based on the other exams, quizzes and project, each counting correspondingly more than it would otherwise have.

Reading Assignments:

Reading assignments will be assigned periodically (3-5) and will consist of online easily accessible material. This material will be included on the lecture exam.

As a back-up for material I present in lecture on the reproductive biology of particular tree species, you should read (Burns & Honkala, online) about the following species in and examine illustrated fruits and seeds:

<i>Acer negundo</i>	<i>Gleditsia triacanthos</i>	<i>Quercus palustris</i>
<i>Acer rubrum</i>	<i>Juglans nigra</i>	<i>Quercus prinus</i> [=Q. montana in your field manual]
<i>Acer saccharinum</i>	<i>Juniperus virginiana</i>	<i>Quercus rubra</i> [=Q. borealis in your field manual]
<i>Acer saccharum</i>	<i>Liquidambar styraciflua</i>	<i>Quercus velutina</i>
<i>Aesculus octandra</i> [= <i>A. flava</i>]	<i>Liriodendron tulipifera</i>	<i>Robinia pseudoacacia</i>
<i>Carya cordiformis</i>	<i>Nyssa sylvatica</i>	<i>Salix nigra</i>
<i>Carya glabra</i>	<i>Pinus echinata</i>	<i>Sassafras albidum</i>
<i>Carya laciniosa</i>	<i>Pinus rigida</i>	<i>Tilia</i> spp.
<i>Carya ovata</i>	<i>Pinus strobus</i>	<i>Tsuga canadensis</i>
<i>Carya tomentosa</i>	<i>Pinus virginiana</i>	<i>Ulmus americana</i>
<i>Celtis occidentalis</i>	<i>Platanus occidentalis</i>	<i>Ulmus rubra</i>
<i>Cornus florida</i>	<i>Populus deltoides</i>	
<i>Fagus grandifolia</i>	<i>Prunus serotina</i>	
<i>Fraxinus americana</i>	<i>Quercus alba</i>	
<i>Fraxinus pennsylvanica</i>	<i>Quercus coccinea</i>	

Project (due in class on Thursday, 10-November-2005; *no exceptions or extensions*)

For your course project, you may do a collection and associated short report (15% of grade). The objectives of the collection project are to give you additional experience identifying woody plants, and to encourage you to notice some of the factors that influence the distribution and abundance of woody plant species in our area.

For this project, you must prepare a collection of woody plants from two different sites that differ notably in at least one environmental or historical parameter (e.g., ridge top versus stream bottom; forest edge versus interior; young woods versus old; you may think of other possibilities). An effort should be made to collect and identify specimens of every species of woody plant (including trees, shrubs, and vines) at each site. The study sites selected must be large enough for you to collect at least 40 species of woody plants in each site (but considerable overlap between the two sets of species is permissible).

In addition, you must prepare a short report (typically 3-4 pages) in which you 1) include a list of all species found at each site, ideally in alphabetical order for ease of comparison, 2) note which species are most abundant in the canopy and understory, 3) discuss the differences between the sites in species composition and occurrence of non-native species, and 4) suggest what factors might be responsible for these differences. The four components listed above are *the minimum* that is required in the report; you may think of other relevant matters to include in your discussion as well. Both the collection and the report are due on Thursday, 10-November-2005.

Your choice of sites must be approved in advance. Feel free to discuss this with me at any time, but by Tuesday, Sept. 20 at the latest, you must turn in a brief proposal (no more than a few sentences) explaining what you intend to do. Because many woody plants are easier to identify before the leaves fall, you should begin this project as soon as possible.

The Collection:

The plant specimens must be pressed flat (see below) and dried. Specimens may be turned in inside folded sheets of newspaper—one specimen plus a label per folded newspaper—or mounted on cardboard or heavy paper.

Each specimen must include a section of stem, not just leaves. Winter-condition twigs are acceptable, however. You should include fruits and/or seeds if they are available.

DO NOT INCLUDE POISON-IVY IN YOUR COLLECTION, even if you are not allergic to it (I am!), but you should note in your paper whether this species was found at your study sites.

Labels should be typed or neatly printed on 3x5 index cards.

Each label should include the following information:

- the genus and species of the plant
- collection locality
- relevant ecological data (e.g., collected beside stream, north-facing slope)
- descriptive information not evident from the specimen (e.g., tree, vine, etc.)
- collection date
- your name and the collection number (assign a number to each specimen)

Collecting and Pressing:

Collect in large plastic bags, and keep the bags closed and as cool as possible until you press the specimens. Wilted specimens are hard to identify (and ugly!). You may find it easier to identify the specimens before pressing them, but don't allow them to wilt excessively in the process.

When pressing specimens, place each one inside a folded sheet of newspaper and separate the newspapers with cardboard corrugates. The corrugates can be obtained by cutting up cartons. Compress the stack under heavy books or between press frames held tightly together by rope or straps. The specimens will dry more quickly and with less likelihood of molding if you change the newspapers once a day.

Basis for Project Grade:

Your grade for the collection project will be based half on the collection and half on the accompanying report. Your score for the collection will be based heavily on accuracy of identification, but other factors that will be considered are the quality of the specimens (e.g., pressed well, adequate material for identification, fruits or seeds present if available, etc.) and the completeness of label data. There is no minimum number of specimens required because different sites vary in their species richness, but if your collection contains far fewer species than would be expected at the sort of site you chose, this will be taken into consideration in grading the project. Your score for the report will be based upon your review and interpretation of the literature regarding the habitats you examined and your associated analysis of relevant ecological gradients structuring the distribution and abundance of species you collected.