BIOL 3610/5610 – Dendrology

Fall Semester 2023

[CRN 82005 (3610), CRN 85321 (5610)]

Instructor: Dr. Carter
Office: BC 1105 *Herbarium:* BC 1040
Telephone: (229) 333-5338
e-mail: Please use the mail tool in BlazeVIEW.
Office Hours (BC 1040): Mon & Wed 11:00 AM–12:00 PM; Thurs 1:30–4:30 PM; other times by appointment

Weekly Course Schedule

Mon	Lec	10:00–10:50 AM, BC 1024
Wed	Lec	10:00–10:50 AM, BC 1024
Fri	Lec	10:00–10:50 AM, BC 1024
	Lab	11:00 AM–1:50 PM, BC 2040

Course Description

Pre-requisite: Completion of Core Area D. A survey of the biology and diversity of trees and of the major forest communities. Course will emphasize species of the southeastern United States and forest communities of North America, including field identification, description and classification of forest communities, and a study of reproductive cycles, anatomy, and development of representative species. [3-3-**4**]
Lecture contact: 75 mins X 30 lectures = 2250 mins Laboratory contact: 170 mins X 15 labs = 2550 mins
Credit: 4 semester hrs

Course Outcomes

Following is a list of course outcomes linked to Biology Department Educational Outcomes (B) and Valdosta State University General Education Outcomes (V).

- The student will demonstrate understanding of the basic principles of taxonomy, including identification, nomenclature, and classification. [B 2; V 4, 7]
- The student will demonstrate comprehension of basic concepts and the ability to use scientific terminology accurately through effective oral and written communication and the use of dichotomous keys. [B 1; V 4, 5, 7]
- The student will demonstrate the ability to handle and analyze plant materials in the field and laboratory. [B 1; V 5, 7]
- The student will demonstrate the ability to work and use basic equipment effectively in the field and laboratory. [B 1; V 4, 5, 7]
- The student will demonstrate the ability to gather and analyze data scientifically. [B 1, 5; V 3, 5]
- The student will demonstrate the ability to follow oral and written instructions effectively. [V 4, 7]
- The student will demonstrate the ability to access course resources and complete assignments on-line using computer technology (i.e., BlazeView). [V 3]
- The student will demonstrate the ability to complete assignments, quizzes, and examinations ethically. [V 8]

Assessment of learning

- Three lecture examinations, including a comprehensive final examination, will be given.
- Routine field identification quizzes will be given.
- Various miscellaneous quizzes and assessments will be given.
- Students will be required to complete an experiential learning project.

Required textbooks

- Duncan, W.H. and M.B. 2000. *Trees of the Southeastern United States.* Univ. of Georgia Press, Athens. 336 pp. [If this book cannot be purchased through the VSU Bookstore, then used copies can be found on-line at a reasonable price through Amazon, Abebooks, or Alibris.]
- Elias, T.S. 1987. *The Complete Trees of North America.* Gramercy Publishing Company, New York. [Multiple copies of this text for in-library use are available on reserve in the VSU Odum Library.]

Miscellaneous required items

- Pencils or pens for recording notes, etc.
- Large three-ring binder for lecture and field notes
- Spiral bound notebook, convenient for field trips
- Hand-lens (provided by instructor)
- 200 3×5 inch lined, white notecards for field quizzes

Additionally, the following are recommended.

- Old clothes, including long pants, and sturdy shoes or boots for field trips
- Rain gear and warm clothing, as appropriate
- Insect repellant for field trips
- *Immediately upon returning from field trips, students are urged to check their bodies thoroughly for ectoparasites (i.e. ticks) and, if possible, to shower.*
- Bottled water for field trips

Attendance, punctuality, participation and cooperation. Regular attendance and punctuality and full participation and cooperation are expected. The student is responsible for all material missed, regardless of the reason for absence. Students arriving late for class should enter the lecture room or laboratory quietly and take the nearest seat to avoid disruption. Bear in mind that field trips normally require prompt departure from campus and that tardiness could easily result in a student missing transportation to the field site and absence from the field trip. Such absences will adversely affect the course grade. Attendance will normally be taken at the beginning of the period. Students who arrive after the roll is called are counted absent unless they inform their instructor immediately after class or lab of their tardiness. It is the student's responsibility to inform the instructor of her/his tardiness. Each three cases of tardiness will be counted as one absence, and cases of tardiness will be counted as absences thusly, unless a satisfactory explanation is provided to the instructor by the student. It is the instructor's prerogative to have the explanation in writing. Any scheduling problems or other extenuating circumstances necessitating chronic tardiness should be explained to the instructor in writing and properly documented at the beginning of the semester. In order to have an absence excused, the student must provide a written explanation with proper documentation immediately upon returning to class. Providing an explanation of absence or tardiness by the student does not insure that the absence or tardiness will be excused. The instructor shall determine the validity of all excuses. Students arriving more than 15 minutes late for class or departing more than 15 minutes before the scheduled end of the class period will be counted as absent. Students absent from more than 20% of the regularly scheduled lecture and laboratory periods are subject to failure in the course, as detailed under Absence Regulations in the VSU Undergraduate Catalog: http://catalog.valdosta.edu/undergraduate/academic-affairs/academic-policies-procedures/.
Points will be deducted from the final course grade for excessive unexcused absence or tardiness, and inadequate participation and cooperation.

BlazeVIEW D2L. A variety of course resources and materials will be made available through BlazeVIEW, and it will also be used to post announcements and grades and to administer assignments, assessments, and quizzes. Students should log into BlazeVIEW daily in order to check for course announcements and assignments. The Mail tool in BlazeVIEW provides a convenient means for students to contact their instructor and one another, and it should always be used to communicate about matters relating to the course. To access BlazeVIEW, select the BlazeVIEW link at the top of the MyVSU page. Students experiencing difficulties using BlazeVIEW should seek assistance through the VSU Information Technology HELP-Desk in Odum Library (telephone 245-4357).

Field trips. Weather permitting, most scheduled laboratory periods will be devoted to field work either on or off campus. These field experiences are designed to reinforce the mastery of course content, through direct observation of living trees in their native habitats with emphasis on the diagnostic characteristics necessary to identify numerous native and naturalized tree species and their classification into higher taxonomic groups, families, and genera. On-site, spontaneous identification of native and naturalized trees will be emphasized on field trips. These field identification quizzes account for a substantial portion of the course grade; therefore, attendance of all scheduled field trips is essential for success in the course. In addition to insect repellant and

water and other items recommended above, students must bring a hand-lens, 3×5 note cards, and notebook on all field trips. Additionally, a four-day field trip to western North Carolina is planned. The purpose of this trip is to provide students with the opportunity to observe and learn about trees of the Appalachian Mountains and Piedmont. We will lodge at Highlands Biological Station in Highlands, North Carolina, and make daily excursions to various sites of interest. Attendance of the four-day field trip to western North Carolina, is an essential component of the course and is a course requirement. All lodging and transportation costs for the excursion to North Carolina are covered through the Price-Campbell Fund of the VSU Foundation; however, students are expected to pay for their meals and other incidental costs. A complete field trip schedule will be provided during the first week of class, including departure and return times.

Lecture examinations. At least two lecture examinations will be given during the semester, one of these prior to midterm. Whereas lecture and laboratory are inextricably integrated in this course, the lecture examinations will include content from both lecture and laboratory, including field trips. Except in emergencies, students are not allowed to depart from the room after starting an exam. Collectively, these examinations account for 250 points in determining the overall course grade.

Final examination. A comprehensive final examination will be given during the scheduled final examination period, which will comprise elements of both lecture and laboratory, including field trips, and will account for 250 points in determining the overall course grade. Except in emergencies, students are not allowed to depart from the room after starting an exam.

Tree identification quizzes. From memory, the student will be required to identify by *family name, scientific name (binomial),* and *common name* the major native and naturalized locally occurring trees. These quizzes will be given outdoors on field trips or indoors, as circumstances require. Normally, the *two-meter rule* will be imposed while students are taking quizzes outdoors, which requires that students disperse to insure that they are separated by a distance of at least two meters (about six feet). A set of reference specimens will be available for student use in the laboratory (BC 2040) outside of the regular scheduled meetings. To supplement observations of living trees and for use on tests and quizzes, photographs of these reference specimens will be made available via the DendroImages folder in OneDrive. Collectively, the tree identification quizzes will account for 250 points in determining the overall course grade.

Miscellaneous quizzes and assessments. A number of miscellaneous quizzes and assessments will be given during the semester to be completed during lecture or laboratory or as homework submitted as hard-copy or on-line through BlazeVIEW. These miscellaneous quizzes and assessments are designed to directly reinforce learning of course content and will collectively account for 150 points in determining the overall course grade.

Course notebook. Students are required to keep a course notebook that will be submitted for grading. The purpose of the course notebook is to reinforce learning of diagnostic characteristics taken up in the field and, thereby, to promote accurate identification of trees. The course notebook should include the following: a summary of the diagnostic characteristics and at least one representative sample for each species taken up during field trips. The course notebook will be evaluated based upon completeness, organization, quality, and neatness. The course notebook should be kept in one or more large 3-ring binders. Each sample should be pressed flat and dried and affixed with glue or clear tape to a sheet of notebook paper. Plastic sleeves promote the growth of mold and should **not** be used to secure specimens in the notebook: Points will be deducted for the use of plastic sleeves. Each sample specimen should be accompanied by a brief account of the diagnostic characteristics emphasized on field trips. Descriptions copied from the textbook or other sources should not be included in the notebook and will result in the deduction of points. The course notebook is due at the beginning of the final exam period and accounts for 100 points in determining the overall course grade.

Grading. If a student thinks an error has been made in grading an examination, quiz, or any other assignment, s/he should communicate about this directly with the instructor *within one week* of the instructor's returning of the graded examination, quiz, or assignment, or posting the result in BlazeVIEW D2L. The final course average will be calculated as follows.

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A = 900–1000 points
B = 800–899 points
C = 700–799 points
D = 600–699 points
F = <600 points

Allocation of points:	
Lecture exams	250 points
Final exam	250 points
Tree identification quizzes	250 points
Misc. quizzes & assessments	150 points
Course notebook	100 points
Total	1000 points

BIOL 5610

A = 1100–1200 points
B = 1000–1099 points
C = 900–999 points
D = 800–899 points
F = <800 points

Allocation of points:	
Lecture exams	250 points
Final exam	250 points
Tree identification quizzes	250 points
Misc. quizzes & assessments	150 points
Course notebook	100 points
Term project	200 points
Total	1200 points

Meeting the minimum point requirement for a letter grade does not necessarily assure that the student will receive that grade. Assignment of the final grade is the prerogative of the instructor and will be based upon each individual student's overall performance, including patterns of consistency, trends toward improvement, and positive attitude as shown through attendance, participation, and cooperation. *Points will be deducted from the final course grade for excessive unexcused absence or tardiness, and inadequate participation and cooperation.*

Class conduct. Students are expected to comport themselves courteously at all times during lecture and laboratory, and on-line. Disruptive behavior will not be tolerated, and students behaving in a disruptive manner will be referred to the Dean of Students for disciplinary action. Refer to the Student Code of Conduct in the VSU *Student Handbook*. Although not a requirement, students are urged to wear face masks when working indoors in close quarters during lecture and laboratory, and when working in the laboratory outside of the scheduled laboratory period. Consumption of food or drink (including water) is prohibited in the laboratory and the lecture room. Students should be punctual for all scheduled lecture and laboratory meetings, and, except in situations of emergency, students should not depart from lecture before being dismissed. Students are to direct their full attention to lecture and are to refrain from unwarranted discourse. Behavior contrary to these guidelines is disruptive. Disruptive behavior will result in deduction of points from the final grade.

Academic integrity. Students are encouraged to work together and to learn from one another in an appropriate manner. Cooperation between students is especially encouraged in study outside of class. However, students should bear in mind that most work ultimately must be done individually and independently. All examinations, tests, and quizzes are given to students individually and are to be completed independently. Academic integrity is the responsibility of all VSU faculty and students. Students are responsible for knowing and abiding by the Academic Integrity Policy as set forth in the Student Code of Conduct and this syllabus. All students are expected to do their own work and to uphold a high standard of academic ethics. Any violations of this policy may result in the academic penalties outlined in the syllabus and may also be referred to Student Affairs for further disciplinary action.

Accommodations Statement. Students with disabilities who are experiencing barriers in this course may contact the Access Office (https://www.valdosta.edu/student/disability/) for assistance in determining and implementing reasonable accommodations. The Access Office is located in University Center Room 4136 Entrance 5. The phone numbers are 229-245-2498 (V), 229-375-5871. For more information, please visit VSU's Access Office or email: access@valdosta.edu. To request reasonable accommodations for pregnancy and childbirth, contact Ms. Myia Miller, Title IX Compliance Officer, at maburden@valdosta.edu. Please note, you will be required to provide documentation from an appropriately licensed medical professional indicating the requested accommodations are medically necessary.

Non-Discrimination and Title IX Statement. Valdosta State University (VSU) upholds all applicable laws and policies regarding discrimination on the basis of race, color, sex (including sexual harassment and pregnancy), sexual orientation, gender identity or expression, national origin, religion, age, veteran status, political affiliation, or disability. The University prohibits specific forms of behavior that violate Title IX of the Education Amendments of 1972. Title IX of the Education Amendments of 1972 prohibits discrimination on the basis of sex in education programs and activities that receive federal funding. VSU considers sex discrimination in any form to be a serious offense. Title IX refers to all forms of sex discrimination committed against others, including but not limited to: sexual harassment, sexual assault, sexual misconduct, and sexual violence by other employees, students or third parties and gender inequity or unfair treatment based on an individual's sex/gender. The designated Title IX Coordinator for VSU is Ms. Selenseia Holmes. To view the full policy or to report an incident visit: https://www.valdosta.edu/administration/student-affairs/title-ix/.

Student Opinion of Instruction (SOI). At the end of the term, all students will be expected to complete an online Student Opinion of Instruction survey (SOI) that will be available through SmartEvals. Students will receive an email notification through their VSU email address when the SOI is available (generally at least one week before the end of the term). SOI responses are anonymous to instructors/administrators, and they will be able to access results only after they have submitted final grades. Before final grade submission, instructors will not be able to see any responses, but they can see the percentage of students who have or have not completed their SOIs. While instructors will not be able to see student names, an automated system will send a reminder email to those who have yet to complete their SOIs. Complete information about the SOIs, including how to access the survey, is available on the SOI Procedures webpage (https://www.valdosta.edu/academics/academic-affairs/sois/).

Supplemental Reading

For current information on classification of angiosperm plant families –

Stevens, P. F. (2001 onwards). Angiosperm Phylogeny Website. Version 14, July 2017 [and more or less continuously updated since]. http://www.mobot.org/MOBOT/research/APweb/ (Accessed 08/08/2023)

For plant community classification –

Barbour, M.G., M.G. and N.L. Christensen. 1993. Vegetation, pp. 97-131 in: Morin, N.R. (Ed.). Flora of North America, Vol. 1. Oxford University Press. New York. http://beta.floranorthamerica.org/Chapter_5 (Accessed 08/08/2023)

Description of the Ecoregions of the United States, compiled by R.G. Bailey, U.S. Forest Service. March 1995. https://www.fs.usda.gov/land/ecosysmgmt/ (Accessed 08/08/2023)

Ecological Subregions of the United States, compiled by McNab, W.H. and P.E. Avers. U.S. Forest Service. WO-WSA-5. July 1994. https://www.fs.usda.gov/land/pubs/ecoregions/ (Accessed 08/08/2023)

Ecoregions, Nearctic. World Wildlife Fund, 1250 Twenty-Fourth Street, N.W., P.O. Box 97180, Washington, DC 20090-7180. http://www.worldwildlife.org/wildworld/profiles/terrestrial_na.html (Accessed 08/08/2023)

NatureServe. 2023. NatureServe Explorer: An online encyclopedia of life [web application]. NatureServe, Arlington, Virginia. https://explorer.natureserve.org/ (Accessed 08/08/2023)

Peet, R.K., T.R. Wentworth, and P.S. White. 1998. A Flexible, Multipurpose Method for Recording Vegetation Composition and Structure. Castanea 63:262 -274.

Thorne, R.F. 1993. Phytogeography, pp. 132-153 *in:* Morin, N.R. (Ed.). Flora of North America, Vol. 1. Oxford University Press. New York. http://beta.floranorthamerica.org/Chapter_6 (Accessed 08/08/2023)

Wharton, C.H. 1978. Physiography and Biota of Georgia. BioScience 28:336-339.

Wharton, C.H. 1978. The Natural Environments of Georgia. Bulletin 114, Georgia Department of Natural Resources. Atlanta.

Miscellaneous –

Peattie, D.C. 1980. Natural History of Western Trees. University of Nebraska Press. Lincoln. 751 pp.

Peattie, D.C. 2007. A Natural History of Trees: of Eastern and Central North America. Houghton Mifflin Co. New York. 606 pp.

Tomlinson, P. B. 2002. The Biology of Trees Native to Tropical Florida. Second Edition. Printed privately. Petersham, Massachusetts. 395 pp.

Tentative Course Outline with *Laboratory Schedule

Week of Aug 14
First Class Day – Mon, Aug 14
Lecture:
Introduction to Course
What is a tree? What is a forest?
Overview of the Classification of Plants
*Laboratory: Identification and Classification of Trees

Week of Aug 21
What is a tree? What is a forest?
Overview of the Classification of Plants
*Laboratory: Identification and Classification of Trees

Week of Aug 28
Diversity of Trees
Gymnosperms
GINKGO
- Ginkgoales: Ginkgoaceae: *Ginkgo:* ginkgo

CONIFERS
- Pinales: Cupressaceae, Pinaceae, Taxaceae: *Chamaecyparis, Juniperus, Taxodium; Abies, Pinus, Picea, Tsuga; Taxus, Torreya:* white cedars, junipers, baldcypresses; firs, pines, spruces, hemlocks; yews, gopherwood

*Laboratory: Identification and Classification of Trees

Week of Sep 4
Labor Day Holiday: Mon, Sep 4
Lecture: Diversity of Trees
Angiosperms
ANA GRADE
- Austrobaileyales: Schisandraceae [incl. Illiciaceae]: *Illicium:* Florida anise

MAGNOLIIDS
- Magnoliales, Laurales: Magnoliaceae, Annonaceae; Lauraceae, Calycanthaceae: *Liriodendron, Magnolia; Asimina; Persea, Sassafras, Litsea; Calycanthus:* magnolias, yellow poplar; pawpaws; redbay, swampbay, sassafras, pondspice; sweetshrub

MONOCOTS
- Arecales: Arecaceae: *Sabal:* cabbage palm

*Laboratory: Identification and Classification of Trees

Week of Sep 11
Lecture: Diversity of Trees
EUDICOTS
- Proteales, Saxifragales: Platanaceae; Hamamelidaceae, Altingiaceae: *Platanus; Hamamelis, Liquidambar:* sycamore; witch hazel, sweetgum
- Malpighiales: Euphorbiaceae, Salicaceae, Rhizophoraceae: *Triadica; Populus, Salix; Rhizophora:* Chinese tallow; willows, cottonwoods; red mangrove
- Fabales: Fabaceae: *Acacia, Albizia, Robinia, Gleditsia, Cercis:* acacias, mimosas, locusts, redbud

*Laboratory: Identification and Classification of Trees

Week of Sep 18
Lecture: Diversity of Trees
- Rosales: Rosaceae, Rhamnaceae, Ulmaceae, Celtidaceae, Moraceae: *Amelanchier, Crataegus, Malus, Prunus; Rhamnus; Planera, Ulmus; Celtis; Broussonetia, Morus:* serviceberries, hawthorns, crabapples, plums, cherries; Carolina buckthorn; elms; hackberries; mulberries

*Laboratory: Identification and Classification of Trees

Week of Sep 25
Lecture: Diversity of Trees
- Fagales: Fagaceae: *Castanea, Fagus, Quercus:* chestnuts, chinkapins, beeches, oaks
- Fagales (continued): Betulaceae, Myricaceae, Juglandaceae: *Alnus, Betula; Morella, Myrica; Carya, Juglans:* alder, birches; bayberries; hickories, walnuts

*Laboratory: Identification and Classification of Trees

Week of Oct 2
Lecture: Diversity of Trees
- Cornales: Hydrangeaceae, Cornaceae: *Philadelphus; Cornus, Nyssa:* mock oranges; dogwoods, gums
- Ericales: Sapotaceae, Theaceae, Ericaceae, Ebenaceae, Cyrillaceae, Styraceae, Symplocaceae: *Sideroxylon; Gordonia, Stewartia; Elliottia, Kalmia, Lyonia, Oxydendrum; Diospyros; Cliftonia, Cyrilla; Halesia, Styrax; Symplocos:* buckthorns; loblolly bay, silky camellia; mountain laurel, lyonias, sourwood; persimmon; titis; silverbells, storaxes; sweetleaf

Midterm: Thurs, Oct 5
*Laboratory: Identification and Classification of Trees

Week of Oct 9
Fall Break: Mon–Tues, Oct 9–10
Lecture: Diversity of Trees
- Myrtales: Combretaceae: *Combretum, Laguncularia:* buttonwood, white mangrove
- Malvales: Malvaceae: *Tilia:* basswoods

*Laboratory: Identification and Classification of Trees

Week of Oct 16
Lecture: Diversity of Trees
- Sapindales: Rutaceae, Meliaceae, Anacardiaceae, Sapindaceae: *Poncirus, Ptelea, Zanthoxylum; Melia; Rhus, Metopium, Schinus, Toxicodendron; Acer, Aesculus, Sapindus:* mockorange, wafer ash, prickly ashes; Chinaberry; sumacs, poisonwood, Brazilian pepper; maples, buckeyes, soapberry

*Laboratory: Excursion to Highlands Biological Station, Highlands, NC

Week of Oct 23
Lecture: Diversity of Trees
- Gentianales: Rubiaceae: *Cephalanthus, Pinckneya:* buttonbush, feverbark
- Lamiales: Oleaceae, Bignoniaceae, Avicenniaceae: *Chionanthus, Fraxinus, Ligustrum, Osmanthus; Catalpa; Avicennia:* graybeard, ashes, ligustrums, wild olive; catalpas; black mangrove

*Laboratory: Identification and Classification of Trees

Week of Oct 30
Lecture: Diversity of Trees
- Aquifoliales: Aquifoliaceae: *Ilex:* hollies

*Laboratory: Identification and Classification of Trees

Week of Nov 6
Lecture: Diversity of Trees
- Apiales: Apiaceae: *Aralia:* devil's walking stick
- Dipsacales: Adoxaceae: *Sambucus, Viburnum:* elderberries, viburnums

*Laboratory: Identification and Classification of Trees

Week of Nov 13
Lecture:
- Biogeography of Trees
- Abscission and Changing Leaf Color

*Botany Laboratory: Development and Structure of the Woody Plant Body

Week of Nov 20
Lecture: Introduction to Forest Ecology
- Mycorrhizae
- Ecological Succession and Fire
- Threats to Trees and Communities

*No lab this week
Thanksgiving Holidays: Wed–Fri, Nov 22–24

Week of Nov 27
Lecture: Major Forest Communities of North America
*Botany Laboratory: Reproduction in Pine and Oak

Mon, Dec 4 – Last Class Day

Final Examination
Tues, Dec 5, 10:15 AM–12:15 PM