Instructor and course information:

Instructor: Dr. C. Alina Cansler; Charles H Clapp Building 439; alina.cansler@mso.umt.edu
Lab assistants: Kosen Verkler (Tuesday labs) and Sam Westfahl (Friday labs)
Schedule: Lecture: Tuesday, Thursday, 13:00 – 13:50 pm., Forestry 301 (Plant Lab)
Laboratory: Tuesday, 14:00 -16:40 & Friday, 14:00 -16:40, Forestry 301 (Plant Lab)
Required Text: Course Pack; pdf available on Moodle; students can print at Paw Print in UM library
Optional Texts: *Trees of North America* -- Golden Press at any large bookstore or on-line
National Audubon Society Trees of North America, 2021, Fieldstone Publishing
Textbook of Dendrology -- McGraw-Hill; Fruit and Twig Key, Dover Press.

Outcomes:

- Students will learn to identify, by sight and verbal description, 119 species of trees and shrubs, native or introduced to North America. Students will learn their native ranges, common sites in natural and urban settings, and ecological associations. Students will become familiar with their Important disease and insect associations, their human uses as well as past, current, and future ecological and political problems of the species.
- Students will carry awareness and knowledge of trees with them into their future personal and professional lives. They will understand details and context of the natural ecosystems and horticulture environments, and maintain appreciations for the interactions between trees and humans during the past, present, and future.

Grading Scheme:

Gymnosperm and Angiosperm Lecture Exams	
1 hr. mid-semester lecture exam covering Angiosperms during the Thursday lecture period, 7th week of class	100
1 hr. mid-semester exam covering Gymnosperms, during the Thursday lecture period, last week of class	100
Angiosperm Laboratory	
6 weekly quizzes, starting week #2 @60 pts. ea.	360
Laboratory Examination, over weeks 1-6, during lab, Week 7	200
Gymnosperm Laboratory	
5 weekly quizzes, starting week # 9 @60 pts. each	300
Laboratory Examination, over weeks 9-13 during finals period	200
Totals	
Subtotal points for class	1260
Drop lowest quiz score for the semester	-60
Total points for class	*1200*

One *grade-enhancement quiz* will be given during the last week of the class. The enhancement quiz will cover Angiosperms, but can be used to count for a missed quiz or will substitute for the lowest quiz score if no quizzes were missed. The lowest quiz score for the semester—including the enhancement quiz if it is the lowest—will be dropped. Weekly grades will be posted in the classroom or on Moodle.

A=90%+; **B**=80%+; **C**=70%+; **D**=60%+; **F**< 60%

Notes on studying

Quizzes will cover (1) identification of specimens, (2) memorizing and correctly spelling species scientific names, (3) plant identification terminology. The emphasis will be on #s 1 and 2. Daily review and practice will help you memorize plant names.

Lecture exams will cover all of the above, as well as other topics covered in lecture including species' location, ecological community, ecological associations, and uses of the plants.

Lab exams will cover similar material as the quizzes, with a focus on identifying specimens.

Topical Outline and Course Schedule

Week	Fall 2023 dates	Trees	Topic
			ANGIOSPERMAE
1	8/23-9/1	8	Angiosperm lifecycle, leaf, flower and fruit arrangements and types; Salicaceae (8). Lecture and lab during lab periods this week.
2	9/4/-9/8	11	Betulaceae (7), Juglandaceae (4) Quiz A-1
3	9/11-9/15	12	Fagaceae (9), Ulmaceae (2), Cannabaceae (1) Quiz A-2
4	9/18-9/22	12	Magnoliaceae (2), Lauraceae (2), Altingiaceae (1), Platanaceae (1), Elaeagnaceae (1), Rosaceae (3), Moraceae (2) Quiz A-3
5	9/25-9/29	14	Fabaceae (5), Sapindaceae (9) Quiz A-4
6	10/2-10/6	10	Aquifoliaceae (1), Tiliaceae (1), Anacardiaceae (1), Cornaceae (3), Oleaceae (2), Ericaceae(1), Bignoniaceae (1) Quiz A-5
7	10/9-10/13	0	Review session during Tuesday's lecture period. **The Angiosperm Lecture Exam during Thursday's lecture period.** **Angiosperm Lab exam during Lab periods**
			GYMNOSPERMAE
8	10/16-10/20	11	Gymnosperm life cycle, cone and leaf structure; Taxaceae (1), Ginkgoaceae (1), Pinaceae –Subgenus strobus (Hapoxylon) of *Pinus* (9)
9	10/23-10/27	11	Pinaceae –Subgenus Pinus (Dipoxylon) of *Pinus* (11) Quiz G-1
10	10/30-11/3	10	Pinaceae –*Pseudotsuga*(1), *Larix* (3), *Picea* (6) Quiz G-2
11	11/6-11/10	10	Pinaceae - *Abies* (4), *Tsuga* (3), *Cedrus* (1); Cupressaceae - *Sequoia* (1), *Sequoiadendron* (1). Quiz G-3 held in lecture Thursday ***No labs this week - classes Friday11/10 due to Veterans day.***
12	11/13-11/17	0	Continue Pinaceae lectures and labs - *Abies* (4), *Tsuga* (3), *Cedrus* (1); Cupressaceae - *Sequoia* (1), *Sequoiadendron* (1). No quiz!
13	11/20-11/24	0	***Thanksgiving Break, no classes***
14	11/27-12/1	10	Cupressaceae -- *Calocedrus* (1), *Thuja* (2), *Taxodium* (1), *Chamaecyparis* (2), *Cupressus* (1), *Juniperus* (3). Quiz G-4
15	12/4-12/8	0	TA-led review session during Tusday's lecture period. Quiz G-5; The Grade Enhancement Quiz (Quiz AG-6); **Gymnosperm Lecture exam during Thursday lecture period**
16	12/12	0	Finals Week. **Gymnosperm Lab Exam during finals period, Dec. 12, 3:20-5:20.** Grades posted on Moodle and Cyberbear.

***Total # of trees*: 119**

Other details

Important Dates Restricting Opportunities to Drop Course Autumn 2023:

Days into Semester	Opportunities	Drop Dates
7th instructional day	Last day for students to add Autumn classes via CyberBear without consent of instructor	Sept. 6, 2023 (by 5 p.m.)
15th instructional day	Last Day that students can drop classes on CyberBear with refund & no "W" on Transcript withdraw from all classes with a partial refund, change Autumn credits in variable credit courses, or change grade mode in CyberBear	20 Sept. = last day
16th to 45th instructional day	Drop requires form with instructor and advisor signature, a $10 fee from registrar's office; student will receive a 'W' on transcript, no refund.	21 Sept. - 1 Nov.
Beginning 46th instructional day	adds & drops require a Course Add/Change or Course Drop form with instructor's & advisor's signatures; $10 fee applies A 'WP' or 'WF' will appear on the transcript for dropped classes; No refunds Students can change variable credit amounts, or change grading options, using a Course Add/Change form with instructor's & advisor's signatures	2 Nov. – 10 Dec.

Class Attendance Policy

- Students who are registered for a course but do not attend the first two class meetings may be required to drop this course. This rule allows for early identification of class vacancies to permit other students to add classes. Students not allowed to remain must complete a drop form or drop the course on the Internet: CyberBear.
- Students are expected to attend all class meetings and complete all assignments for this course. Student may be excused for brief and occasional absences for reasons of illness, injury, family emergency, religious observance or participation in a University sponsored activity. (University sponsored activities include for example, field trips, ASUM service, music or drama performances, and intercollegiate athletics.) Students shall be excused for military service or mandatory public service.
- Students incurring an excused absence will be allowed to make up missed work when done in a manner consistent with the educational goals of this course.
- Students expecting to incur excused absences should consult with the instructor early in the term to be sure that they understand the absence policies for this course.

Reasonable accommodation

- Students with disabilities have the right to equal opportunities for education and participation in University activities. Students initiate the request for accommodations and services in a timely manner, communicate with faculty regarding accommodations, and work with the Office for Disability Equity as needed. https://www.umt.edu/disability/current-students/default.php

Student Conduct

- All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All students need to be familiar with the Student Conduct Code. https://www.umt.edu/campus-life/community-standards/default.php
- Beyond academic conduct, we will work to build a respectful and inclusive community of learners in class and labs, understanding that we all bring different perspectives, skills, and backgrounds to our study of trees.

Where we are learning

- Our classroom extends to the UM campus and surrounding neighborhoods. The UM campus is also the State of Montana Arboretum. https://www.umt.edu/arboretum/
- That means that we are also studying on the aboriginal territories of the Salish and Kalispel people
- All the species we are studying had important meanings and uses to indigenous peoples within their native ranges.

Key to Species Groups and Geographic Location Abbreviations

Region abbreviations	Descriptions	Species-group abbreviations	Species-groups
NRM	*Northern Rocky Mountains*; eastern Washington, northern Idaho, Montana & Canada	BBM	birch, beech, maple
SRM	*Southern Rocky Mountains*; Wyoming, southern Idaho, Utah, Colorado, New Mexico, Arizona, western Texas and northern Mexico	D-FL	Douglas-fir, western larch
BH	*Black Hills* of South Dakota and northern Nebraska	ESAF	Engelmann spruce, subalpine fir
FB	*Fog Belt* of northern California, north to southern coast of Oregon	EWP	eastern white pine
IE	*Inland Empire*; western Montana, northern Idaho, western Washington, southeastern British Columbia	LPES	lodgepole pine, Engelmann spruce
NE	*New England;* northeast USA and eastern Canada	NH	northern hardwoods (mixture of white oak, northern red oak, sugar and red maple, yellow and paper birch, white ash, quaking and bigtooth aspen, yellow-poplar and basswood).
SW	*Southwestern* USA	NWC	northern white cedar
SCP	*Southern Costal Plain*	OCYP	oak, chestnut, yellow-poplar
PC	*Pacific Coast* of the USA and Canada, including Alaskan coast	OH	oak, hickory
		PJ	pinyon, juniper
		SCP	sycamore, cottonwood, poplar (riparian or riverbanks of Midwest is a better descriptor as this abbreviation can be confused with southern coastal plain)
		SH	southern hardwoods (mixture of southern red oaks, sweetgum, black and water tupelo, flowering dogwood, magnolia, basswood, pecan hickories)
		SH	spruce, hemlock (eastern or western species)
		SM	sycamore, silver maple
		SPF	spruce, pine, true fir
		SYP	southern yellow pine
		WYP	western yellow pine

Examples of **Tables of Comparative Features** that you should develop in order to learn how to differentiate the species that have similar characteristics

Morphologic Comparison of the Subgenera Leucobalanus and Erythrobalanus

Subgenus	Leaf Margins	Acorn Taste	Acorn Inner Shell	Acorn Maturity	Latewood vessel elements	Tyloses
Leucobalanus (white oaks)	Smooth, rounded lobes	Mildly sweet to bland	Smooth	1 year	Outline indistinct on transverse surface when viewed w. hand lens	Abundant in heartwood
Erythrobalanus (red oaks)	Pointed, bristle- tipped lobes	Bitter	Pubescent	2 years	Outline distinct on transverse surface when viewed w. hand lens	Sparse in heartwood

Morphologic Comparison of the Subgenera Hapoxylon (*Strobus*) and Dipoxylon (*Pinus*)

Subgenus	Fibro- vascular Bundles in Needle	Leaves per Fascicle	Fascicle Sheath	Umbo Location	Cone Armature	Earlywood to Latewood Transition
Strobus or Hapoxylon (soft pines)	1	Usually 5 (except pinyons)	Deciduous	Usually terminal	Generally Unarmed	Generally gradual
Pinus or Dipoxylon (hard pines)	2	2's, 3's,	Persistent	Dorsal	Generally Armed	Generally abrupt