

BSC 433/L: Plant Systematics
Spring 2009
Lecture, Tuesdays and Thursdays 8–9:15 A.M.
Lab or Field, Tuesdays 1–5:05 P.M.

Instructor

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Office Hours

By appointment.

Course Description

Lecture 2 hrs. Lab 2 hrs. The nomenclature, classification, identification, and relationships of plants, with an emphasis on the local flora. Prerequisites: BSC 110 (General Biology 1), 111 (General Biology 2), 226 (General Botany), or consent of the instructor.

Course Overview

This course entails the study of plant diversity, focusing on the plants of Mississippi and the southeastern United States of America. Laboratory exercises and field trips will introduce the student to families, genera, and species of plants and to methods and texts whereby one can identify unknown plants. Lecture will give the student background on how to name and classify plants properly, how plants are distributed, features of the major groups of plants, and how major groups of plants are related. A service-learning project will develop the student's observation and writing skills and provide opportunities to research "real world" questions with the simultaneous goal of providing service to the community.

Course Objectives

Upon completion of this course, the student should be able to:

- Understand the role of systematics in modern biology,
- Recognize by sight the common plants of Mississippi,
- Apply the proper taxonomic scheme and nomenclature to plants,
- Recognize morphological characteristics of plants and accurately use botanical terminology,
- Recognize and describe the morphological features of the major families of plants,
- Use taxonomic keys to identify unknown plants, and
- Write clear and informative narratives about botanical observations.

Required Texts

Radford, A. E., H. E. Ahles, and C. R. Bell. 1968. *Manual of the Vascular Flora of the Carolinas*. Chapel Hill, NC: University of North Carolina Press.

Walters, D. R., D. J. Keil, and Z. E. Murrell. 2006. *Vascular Plant Taxonomy*, 5th ed. Dubuque, IA: Kendall/Hunt Publishing.

Other Useful Texts (optional)

Nelson, G. 2005. *East Gulf Coastal Plain Wildflowers: A Field Guide to the Wildflowers of the East Gulf Coastal Plain*. Falcon.

Timme, S. L. 1989. *Wildflowers of Mississippi*. Jackson: University Press of Mississippi.

Other Useful Equipment (optional)

10× or 14× hand lens (=loupe, magnifier), \$20-50. Several online dealers include:

<http://www.kooters.com/handlens.html>

<http://www.ascscientific.com/lens.html>

<http://www.compleatnaturalist.com/default.htm>

<http://www.forestry-suppliers.com> (search for pocket loupe)

A pocket-size notebook. Use discretion here. Something is needed that you will feel comfortable carrying with you and taking notes in the field. Some prefer small clipboards; others prefer reporter-style steno notebooks. Just make sure it can fit in a pocket or pouch, or you can attach it to a carabineer and clip it onto your belt loops. If you bring a larger notebook, you will probably be frustrated, as one hand is always occupied or you have to put it in and take it out of your backpack incessantly.

Field Trips

Because field trips involve the outdoors, plan to get dirty, as we will end up in wet, muddy, messy, and insect-infested places. Shorts, sandals, and flip-flops are strongly discouraged. Long pants with a snug hem (no loose bell-bottoms) and long sleeve shirts will help minimize insect bites, sun exposure, and cuts / scratches. Typical khaki pants are much better than blue jeans because they are lighter, cooler, and dry more easily if (when!) you get wet, but blue jeans are thicker protection against briars and other prickly plants. You should wear a pair of shoes that can get wet. I prefer rubber boots, but some people get blistered feet from walking in them for a long period. Don't forget a water bottle if you are easily dehydrated. We won't always have an opportunity to stop and pick up a cola and tater logs. We will have quizzes on most of our field trips. You will be tested on sight identification of plants to which you have been formally introduced during previous classes, labs, or field trips and on the keying of unknowns. You will be expected to know and spell the Latin names.

Quizzes

Numerous quizzes will be given throughout the semester, both at the beginning of lecture and during laboratory or field trips. *Be prepared for a quiz every time we meet.* We may not have a quiz at each meeting, but quizzes should be expected. Your four lowest quiz grades will be dropped. Any unexcused absence results in a quiz grade of zero and will be included among the four dropped scores.

Plant Collection

A collection of 40 pressed plants is required. Each plant must have at least some reproductive structures (flowers, fruits, cones, sori, even flower buds), must be correctly identified to family, genus, and species, must be aesthetically prepared and appropriately sized for mounting as a herbarium specimen, and must include a label on archival paper (available from the professor) with the appropriate information. Details about pressing and preparing the label are provided in a separate, more thorough handout. A significant part of your grade is based on this project, which means that any diligent student should do well in this course. The project is also your opportunity to *practice* the material learned in class, lab, and field trip and to learn additional plants. With permission of the instructor and the site manager, students may make collections while working on the service-learning project.

Service-Learning Project and Writing Assignments

Students will develop their skills in integrating “real world” questions and plant systematics by preparing interpretive signs for trails at a local park. Students will spend 1 hour per week at a park observing the plants and interacting with the park staff. Park staff may point out interesting biological phenomena or may ask questions, and students may ask them what they know or have seen. Students may elect to walk a section of trail or sit in a designated location. As plants or biological phenomena occur that are interesting, the student should record the observations in a journal (about one page per day). The student should be able to identify the plant(s) using the texts or collect the plant(s) and identify it (them) later in laboratory. Any difficulties in identification or interactions with the staff (or trail users) should be recorded, as well as your *feelings* about what you are doing, seeing, and learning. If you have a particularly interesting observation or question, you should find an answer in order to develop an interpretive sign. This may be done by library research or continued observation. You should write in your journal how and where you search for information.

At the end of February, March, and April, you will submit your journal (in whatever format) as well as a two to three page reflection paper on what you have seen, learned, and felt. Near the end of the course, you will submit text for six interpretive signs, each about 2/3 to one whole page, double-spaced.

Class Procedures and Requirements

Attendance in class and lab is critical for this course. Some plants may be encountered only once, and topics covered in the field may be relevant and obvious at only one site. The indicated chapter(s) should be read and exercises completed before class, which will prepare you for the material presented in lecture, lab, or field. The exams may cover any of this material, plus material learned in lab or on field trips. Any changes to the syllabus will be announced *in class or lab* at least one class period in advance.

Be prompt to class. Most laboratory periods will be dedicated to field trips, and we will leave on time (see www.time.gov if you need help). Questions and discussion are encouraged. Cellular phones, pagers, and other electronic devices should not disrupt class. Laptop computers may be used, but be aware of and eliminate noises or habits that may distract other students. Behavior at the service-learning field site should reflect positively on the University of Southern Mississippi; therefore, be kind, consistent, and respectful.

Evaluation Criteria (lecture and lab will be considered together for one final grade applied to both)

Quizzes (in lecture, lab, and field)	20%
Exam 1	15%
Final Exam	15%
Journals, Reflection Papers, & Signs	20%
Plant Collection	25%
Participation and Service	5%

Grading Scale

90–100%	A
80–89%	B
70–79%	C
60–69%	D
0–59%	F

Make-Up Exams and Late Projects

Make-up exams are given **only** if written corroboration of a serious research conflict or disabling condition or situation is provided (doctor's note, advisor's note, parental note [with phone number] about funeral, police report). Contact professor immediately about re-scheduling. *Re-scheduling after one week is not possible.* Projects cannot be turned in late. A late project or an unscheduled make-up exam results in a grade of zero. *There will be no extra credit possibilities.*

Academic Honesty

When cheating is discovered, the professor will give the student an F on the work involved or in the course. If further disciplinary action is deemed appropriate, the student will be reported to the Dean of Students. In addition to being a violation of academic honesty, cheating violates the Code of Student Conduct and may be grounds for probation, suspension, and/or expulsion. Students on disciplinary suspension may not enroll in any courses offered by the University of Southern Mississippi.

ADA Policy

If a student has a disability that qualifies under the Americans with Disabilities Act and requires accommodations, he/she should contact the Office for Disability Accommodations (ODA) for information on appropriate policies and procedures. Disabilities covered by the ADA may include learning, psychiatric, physical disabilities, or chronic health disorders. Students can contact ODA if they are not certain whether a medical condition / disability qualifies. Mailing address: 118 College Drive #8586, Hattiesburg, MS 39406-0001; Telephone: 601-266-5024; TTY: 1-800-582-2233; Fax: 601-266-6035; e-mail: suzanne.hebert@usm.edu.

Class Schedule

Date	Topic	Reading Assignment (from Walters et al.)
January 13	Course Logistics Introduction to Plant Systematics	
13	no lab	
15	Plant Systematics, continued Nomenclature, Part 1	1
20	Nomenclature, Part 2	2
20	Vegetative Morphology Lab	3
22	Floras	5
27	Collecting Plants Tour of the Herbarium	7 and handout
27	Reproductive Morphology (Check out presses)	11
29	Factors Affecting the Distribution of Plants	
February 3	Ecoregions of Mississippi and the Southeastern U.S.A.	handout
3	Use and Construction of Dichotomous and Interactive Keys	Radford et al., preface Review 5 handout
5	Survey of Plants (Review of Botany, part 1)	8
10	Survey of Plants (Review of Botany, part 2)	
10	Field Trip 1	
12	Gymnosperms: Cycadaceae Ginkgoaceae, Cupressaceae, Pinaceae	10
17	Magnoliids and Primitive Tricolpates: Nymphaeaceae, Illiciaceae, Magnoliaceae, Lauraceae, Ranunculaceae	12
17	Field Trip 2	
19	Caryophyllids: Cactaceae, Caryophyllaceae, Droseraceae, Polygonaceae	13
24	Mardi Gras holiday no lecture or lab	

26	EXAM 1 Dr. Alford out of town (Wed., Feb. 25 is the last <i>official</i> date to drop class, but since exam is after this date, I will permit you to withdraw until March 5.)	
March 3	Rosids, Part 1: Onagraceae, Melastomataceae, Euphorbiaceae, Vitaceae	275–276, 306–309 journal and reflection paper due
3	Field Trip 3	
5	Rosids, Part 2: Hypericaceae, Violaceae, Passifloraceae, Salicaceae	311–316
8	Daylight Saving Time ends Set clocks ahead one hour	
10	Rosids, Part 3: Fabaceae, Rosaceae	317–324 first part of project due
10	Keying Lab	
12	Rosids, Part 4: Cucurbitaceae, Fagaceae, Betulaceae	332–338
17	Spring Holidays no lecture, lab, or field trip	
19		
24	Rosids, Part 5: Brassicaceae, Malvaceae, Sapindaceae (incl. Aceraceae), Anacardiaceae	339–342, 345–348
24	Field Trip 4	
26	Asterids, Part 1: Apiaceae, Apocynaceae / Asclepiadaceae, Ericaceae, Sarraceniaceae	359–360, 385–387, 394–395, 406–407
31	Asterids, Part 2: Lamiaceae Scrophulariaceae, Solanaceae, Convolvulaceae	398–403
31	Field Trip 5	
April 2	Asterids, Part 3: Asteraceae, Rubiaceae	374–384, 392–393 journal and reflection paper due
Leave at 1 P.M. 3	Field Trip to Clark Creek Natural Area and Ethel Vance Natural Area (overnight camping)	
Return by 7:00 P.M. 4		
7	Monocots, Part 1: Alismataceae, Araceae, Palmae, Potamogetonaceae	421–423, 432–435, 447–449
7	Field Trip 6	

9	Monocots, Part 2: Liliaceae, Smilacaceae, Iridaceae, Orchidaceae	436–446
14	Monocots, Part 3: Juncaceae, Cyperaceae, Poaceae	452–463
14	Field Trip 7	
16	Monocots, Part 3 continued: Juncaceae, Cyperaceae, Poaceae	
21	Lycopods, Horsetails, and Ferns	9
21	Peer Evaluation of Interpretive Signs Free Time for Project Keying	interpretive signs due
23	Systematics Research and Species Concepts	17-18
28	Brief History of Plant Systematics, Traditional Classifications Plant Collection Due – 8 A.M.	6 return presses
28	video	
30	Phylogenetics and Modern Classifications	4 journal and reflection paper due
Tuesday, May 5 7:00 – 9:30 P.M.	Final Examination Comprehensive – Lecture, Lab, and Field	