

COURSE OBJECTIVES

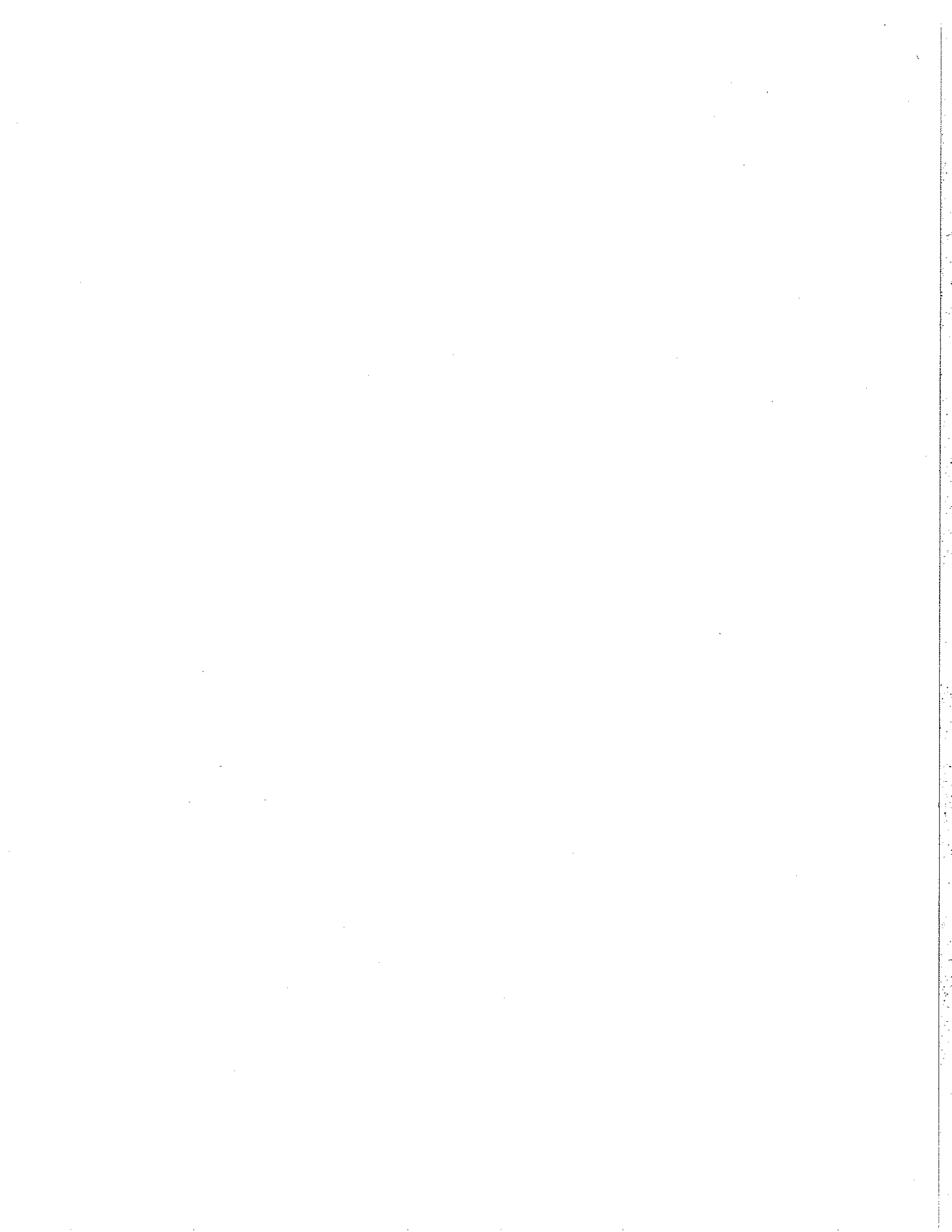
- 1) To learn the unifying characteristics of representative flowering plant families;
- 2) To develop and apply skills in the gathering of data about flowering plant families;
- 3) To examine the fundamental principles which govern natural ecosystems, the basic theories of biological evolutionary change, the structure and function of various flowers, and the anatomy and physiology of representative flowering plant families;
- 4) To develop general field and laboratory skills, reporting of results, and independent problem solving.

COURSE REQUIREMENTS [<http://www.olemiss.edu/depts/biology/faculty/holland>]

- 1) **Attendance is required for all lectures, videos, field trips, and laboratories.** Excessive absences will be reported to the Dean. Assignments or exams missed due to unacceptable and unexcused absences will not be made up. Students are responsible for all lecture material missed through absences. Report an absence at once to the instructor [915-5874].
- 2) **The laboratory is a required part of the course. In other words, the lecture cannot be taken for credit without the laboratory, and vice versa.** As such, the laboratory topics are closely integrated with the lecture topics. Similarly, one grade is given for the course. The semester grade is based on total points.
- 3) Absences from the Final Exam and incomplete work will be handled according to university procedures, as given in the catalog.
- 4) Allocation of points for semester grades:

Exams (two hour tests and Final Exam)	350
Laboratory exams/quizzes	100
Paper on a flowering plant family (10 entries, due 6 Mar.15)	50
Presentation on flowering plant family (3 and 5 Mar. 15)	25
UMFS sampling – plant collection and presentation (due Apr.28/30)	75
Laboratory Notebook (including all drawings and graphs from all lab exercises, due 1 May 15)	<u>50</u>
	650
- 5) Grades: A (90 – 100%); B (80 – 89%); C (70 – 79%); D (60 – 69%); F (59% and below)
- 6) Dr. Holland's office is located in Shoemaker 430. Office hours are as follows:

Tuesday	1:00 pm. - 3:00 pm
Wednesday	11:00 a.m. - 1:00 p.m.
- 7) It is expected that all work turned in to Dr. Holland is the end result of independent and creative efforts on the part of each individual student. The University of Mississippi Creed supports and assumes academic honesty.



Text: Heywood, V. H., R. K. Brummitt, A. Culham, and O. Seberg. 2007. Flowering Plant Families of the World. Firefly Books, First Edition, Ontario, Canada, 424 pages.

SCHEDULE OF THE COURSE

<u>Week</u>	<u>Date</u>	<u>Lecture Topic</u>	<u>Reading Assignments</u>
1.	Jan. 22	Introduction to Angiosperms	pages 1-22
2.	Jan. 27	Monocots: Acoraceae	pages 339-348
3.	Feb. 3	Monocots: Arecaceae	pages 348-360
4.	Feb. 10	Monocots: Cyperaceae	pages 360-376
5.	Feb. 17	Monocots: Juncaceae	pages 376-396
***	Feb. 19	FIRST EXAM	
6.	Feb. 24	Dicots: Acanthaceae	pages 23-44
7.	Mar. 3	Dicots: Asteraceae	pages 44-64
8.	Mar. 17	Dicots: Brassicaceae	pages 64-84
9.	Mar. 24	Dicots: Caryophyllaceae	pages 84-104
10.	Mar. 31	Dicots: Cucurbitaceae	pages 104-128
***	Apr. 2	SECOND EXAM	
11.	Apr. 7	Dicots: Droseraceae	pages 128-150
12.	Apr. 14	Dicots: Hamamelidaceae	pages 150-178
13.	Apr. 21	Dicots: Leguminosae	pages 178-226
14.	Apr. 28	Dicots: Rosaceae	pages 280-302
****	May 5	* FINAL EXAMINATION *	12:00 noon

Grades: A (90 – 100%); B (80 – 89%); C (70 – 79%); D (60 – 69%); F (59% and below)

PLANT DIVERSITY FIELD AND LABORATORY EXERCISES

<u>Date</u>	<u>Topic/Activity</u>
Jan. 24	Use of presses for collecting and preparation of lab notebook
Jan. 29	Use of keys for identification
Feb. 5	trees on campus
Feb. 12	magnolia, buttercup, & carnivorous plants
Feb. 19	lily, iris, & orchid families
Feb. 26	mustard, potato, and mint families
Mar. 5	legume, rose, and aster families
Mar. 12	Spring Break
Mar. 19	sampling at UM Field Station
Mar. 26	plant identification in Shoemaker 213
Apr. 2	sampling at UMFS
Apr. 9	plant identification in 213
Apr. 16	sampling at UMFS
Apr. 23	plant identification in 213
Apr. 30	Lab exam and plant identification
May 5 at noon	Final exam

INSTRUCTIONS FOR PREPARATION OF PAPER ON FLOWERING PLANT FAMILY

The topic of the paper can be a flowering plant family of particular interest to the student, but not necessarily covered in much detail in lecture or lab. Regardless of the topic, the bibliography paper should consist of numerous entries selected from the literature. Students are urged to research a particular topic using botanical web sites, as appropriate, such as the US Department of Agriculture Plants Database or the Missouri Botanical Garden. The OleMiss Library subscribes to a variety of scientific periodicals, such as Bioscience, Botanical Review, Ecology, Natural History, Marine Biology, Proceedings of the National Academy of Sciences, and Scientific American, and students are encouraged to peruse these periodicals in developing a bibliography. Through inter-library loan, it is also possible to obtain materials the OleMiss Library does not have. Various field guides are available in Shoemaker 213. You should select a family, have it approved, and turn in three to five abstracts by 5 February 2015.

Your final paper should consist of three parts:

- 1) a short overview (summary) of the family addressing the following questions:
 - a. what is the family? Order? Class? Current systematics?
 - b. where found? Continent[s]? Country[ies]? Habitat? Xeric? Hydric?
 - c. native where? Physiology? Reproduction? Pollination? Dispersal?
 - d. what good are they? Use in food? Gardening? Indicator of wetland edge?
 - e. biological adaptations to native environments? Easy to cultivate?
- 2) an outline of the topic with only the author's last name and date of publication listed for each subheading;
- 3) the bibliography itself, consisting of 10 entries, with:
 - a. each reference properly cited in alphabetical order (see footnote);
 - b. a paragraph summarizing in your own words the contents of the paper/web site/chapter, showing its relevance to your topic;
 - c. at least one source published in 2015.

FOOTNOTES:

1. References should be cited in the following manner:
 - a) Books: Smith, J.C. 2011. An introduction to plant diversity. McGraw-Hill Co., New York, p. 124.
 - b) Journals: Jackson, R.S. 2013. Studies of dispersal in higher plants. Ecology 61: 123-134.
 - c) web site: Brown, A. 2004. Use of *Typha latifolia* in riparian zone restoration. <www.epa.gov/waterandwatersheds/restoration/Typha> US Environmental Protection Agency, Office of Water and Watersheds, Washington, D.C.
2. Sample bibliographies are available in Shoemaker 213.
3. Please be sure to check spelling and grammar before submitting a paper.

INSTRUCTIONS FOR PREPARATION OF PLANT COLLECTION

The primary purpose of the plant collection is to allow each student to become familiar with techniques of appropriate flowering plant field collection, gathering of useful field notes, appropriate sample preparation, and accurate identification for the local flowering plant flora. A secondary purpose of the plant collection is to augment the Pullen Herbarium's collection of quality specimens from The University of Mississippi Field Station [UMFS]. Sherry Bell-Surette prepared an overview of all UM Field Station species currently in the Pullen Herbarium database [13 January 2005], and Alison Faulkner prepared a shortened list of UMFS plants in the Pullen Herbarium, noting the number of specimens currently in the Herbarium [2 February 2005]. Rani Menon continued to update the UMFS plant list until she graduated in May 2011. If you have already started your own plant collection, then please collect at least one good specimen for the Herbarium along with a good specimen for your personal collection.

In your final collection, at least 10 specimens must be species we have NOT examined in class. Regardless of the plants collected, the final collection should reflect use of relevant papers or books from the recent systematic literature. Students are urged to check plant identifications using botanical web sites, as appropriate, such as the Pullen Herbarium web site and the US Department of Agriculture Plants Database. After finding plant specimens in the field, PLEASE utilize the plant press as demonstrated by Teaching Assistant Hak-Chul Lee and myself during class on January 22th. There are numerous plant identification manuals in Shoemaker 213, and students are encouraged to consult these keys frequently. PLEASE do not forget to dry adequately and then freeze plant specimens prior to bringing them into the Pullen Herbarium. When your plant collection is submitted on April 30, 2015, any references consulted should be noted in your bibliography.

Your final collection should consist of at least 25 specimens, and will be graded as follows:(1) two points will be allocated to each specimen noted on your list of plants;

2) one point will be awarded on the accuracy of the identification [e.g. what is the genus? Species? Family? as noted in the USDA plants database];

3) one point will be awarded on the completeness of the specimen and the detail on the specimen label [e.g. where found? Habitat? Lotic? Lentic? native where? Collected by whom? Identified by whom? Flowers? Fruits?]

Your presentation [worth 25 points] on your plant collection might best be presented in powerpoint:(1) show what your specimens look like [e.g. in the field to show habitat where found and/or specimen pressed in newspaper], and

2) information regarding identification of specimen [e.g. how easy was it to recognize this species? Who or what resources helped with identification? What characteristics would you use with the BISC 160-162 classes to help them recognize the family?].