

Floristic Research Methods

MES Elective - Spring 2009 Syllabus

In this program students will learn how to use Hitchcock and Cronquist's *Flora of the Pacific Northwest*, a technical key for identifying unknown plants. We will spend time in the field and laboratory discussing diagnostic characters of plant families. Students will learn how to sight recognize common native trees and shrubs common to our region. They will have the opportunity to share this knowledge through environmental education community service by giving a plant walk with one to two other students. Readings will be focused on floristics and plant taxonomy. Students will learn how to collect and prepare herbarium specimens and apply this knowledge to a collaborative research project. Students will also learn about how to use a herbarium for floristic research. Two field trips will give students an opportunity to study the Washington flora in the field. Students will be expected to maintain a field journal and will be taught basic botanical illustration skills to support this work. *Program is preparatory for careers and future study in conservation, ecological restoration, forestry, natural resource management, plant ecology, or plant taxonomy.*

Faculty: Frederica Bowcutt, Lab II rm 3272, X 6744,
bowcuttf@evergreen.edu
Office Hours: Wednesdays 4-6 pm & by appointment

Book List:

Texts	Required Readings
Required Texts: Hitchcock & Cronquist, <i>Flora of the Pacific Northwest</i> Zomlefer, <i>Guide to Flowering Plant Families</i> Simpson, <i>Plant Systematics</i> Optional Texts: Brodie, <i>Drawing and Painting Plants</i> Keith West, <i>How to Draw Plants</i> Harris and Harris, <i>Plant Identification Terminology</i> Harrington, <i>How to Identify Plants</i> Judd, <i>Plant Systematics: A Phylogenetic Approach</i>	Scientific Journal Articles (Most available @ program website)

Weekly Schedule:

Monday	Saturday
6-8 pm Lecture (Lab I rm 1050)	May 2 nd 9 am-5 pm Field Trip (Meet in 1 hour parking in Lot B)
8-10 pm Lab (Lab I rm 1050)	(other optional trips in syllabus)

Learning Objectives:

- Learn how to use a technical dichotomous key
- Develop sight recognition skills including common families
- Begin to hone botanical illustration skills
- Learn how to use a herbarium to conduct floristic research

Required Equipment:

- Hand lens and dissection kit (both available at bookstore),
- Unlined sketch pad 3.5" X 5" (e.g. Strathmore's 400 series),
- Spiral bound sketch book minimum 7" X 10" with good quality light or medium weight paper,
- Two fine-tip pens with waterproof ink (e.g. Pigma Micron 01, 08, and 005 or Copic Multiliner sp 0.25 and 0.7),
- Pentel Twist-Erase (.09 mm) or other kind of mechanical pencil (0.7 or 0.9 mm, get HB lead),
- Pink Pearl eraser (optional),
- Watercolor pencils (e.g. Aquarelles) or Prismacolor pencils if you prefer,
- Small cheap, pencil sharpener (optional),
- Small, cheap sumi paintbrush or sable paintbrush (e.g. no. 4 or 5), not necessary if you get or already have Prismacolor pencils.
- Normal wooden pencil with 2B lead or softer

Take Home Exam

Final Due Date: Monday, June 1st (typed response to questions #1-3 due April 20th)

1. What is floristics?
2. What methods are used to conduct floristic research?
3. Why is the flora of the Puget Sound prairies unique?
4. Explain the different factors that influence the flora of a region. Give examples from California and the Pacific Northwest.
5. Why does floristics matter? In the past? Now? In the future?
6. Why do some academic communities down play the importance of floristics?

To respond to these questions draw from the assigned readings and the floristics bibliography provided. Cite your sources. You may add additional sources of information from the peer reviewed scientific literature. Minimum seven typed, double-spaced, pages for your total final response plus an annotated bibliography of at least 10 texts used to support your answers.

Week 1 March 29-April 4 Introduction

Lecture Reading: Simpson, *Plant Systematics*, Chap. 15 Plant Identification & Appendix 2 Botanical Illustrations

Mon, March 30

6-8 pm

Orientation & Drawing Techniques for Botanists Part I

8-10 pm

Lab: Intro to Keying Ferns & Using Botanical Latin

(Bring Hitchcock & Cronquist + dissection & illustration kit to all labs)

Saturday, April 4 or Sunday, April 5

FIELD TRIP: Arrange to go for a plant walk with one or more of your classmates to produce gesture drawings of native plants. Good places to go include: Evergreen State College teaching gardens and forest reserves,

McClane Nature Trail, Watershed Park, Staircase in Olympic National Park, Nisqually Wildlife Refuge. **(Bring Hitchcock & Cronquist on all field trips)**

Week 2 April 5-11 What is a Flora?

Lecture Reading: Dunnwiddie et al., "The Vascular Plant Flora of the South Puget Sound Prairies" & Bowcutt, "Flora of Sinkyone Wilderness State Park"

Lab Reading: Simpson, *Plant Systematics*, Chap. 9 Plant Morphology

DUE: April 6 – 10 gesture drawings of plants minimum; use a copy machine to enlarge your best one to about 8.5" X 11".

Mon, April 6

6-8 pm

Discussion: Anatomy of a Flora

Lab: Practice Keying Conifers

8-10 pm

Workshop: Drawing Techniques for Botanists Part II
(Bring all your art supplies and dissection kit)

Sat, April 11 (10 am -1 pm) and Sun, April 12 (1-4 pm)

Optional: Edible Food Forest Garden Installation
(Next to the Housing Community Center)
(Wear old clothes and bring garden gloves)

Week 3 April 12-18 Prairie Floristics

Lecture Reading:

- Leopold & Boyd, "An ecological history of old prairie areas in southwestern Washington," pp. 139-163 in Robert Boyd, (ed.). *Indians, fire, and the land in the Pacific Northwest*. Oregon State University Press, Corvallis.
- Norton, Helen. 1979. "The association between anthropogenic prairies and important food plants in western Washington." *Northwest Anthropological Research Notes* 13.
- Kruckeberg, *The Natural History of Puget Sound Country*, pp. 284-305.
- Hansen, Henry P. 1947. "Climate versus fire and soil as factors in the Puget Lowland of Washington." *American J. of Science* 245 (5): 265-286.

Mon, April 13

6-10 pm

Guest Lecture on Prairie Flora of Fort Lewis: Rod Gilbert

8-10 pm

Lab: Flower and Vegetative Morphology of Aceraceae

Weds, April 15

No Office Hours

Saturday, April 18 or Sunday, April 19

FIELD TRIP: Arrange to go for a plant walk with one or more of your classmates to practice keying and work on illustrations.

Week 4 April 19-25 Herbaria & Floristic Research

Lecture Reading: Simpson, *Plant Systematics*, Chap. 17 Planting Collecting and Documentation & Chap. 18 Herbaria and Data Information Systems

DUE: Mon, April 20 - typed responses to questions #1-3 on the take home exam.

Mon, April 20

6-8 pm	Herbarium Tour & Intro to Plant Collecting plus Workshop on Specimen Preparation
8-10 pm	Lab: Rosaceae & Brassicaceae

Week 5 April 27-May 2 Floristic Regions

Lecture Readings: Raven & Axelrod, *Origins and Relationships of the California Flora*; Detling, *Historical Background of the Flora of the Pacific Northwest*.

Field Trip Reading: Constance, Doyle, Hinchliff, and Sheedy, "Flora for Glacial Heritage"

Mon, April 28

6-8 pm	Lecture: California Floristic Regions
8-10 pm	Lab: Fabaceae

Saturday, May 2

9 am – 5 pm	FIELD TRIP: Mima Mound and Glacial Heritage (Meet in 1 hour parking in Lot B)
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(Bring Hitchcock & Cronquist, hand lens, 10 cm ruler, field notebook, water, food, raingear, art supplies and umbrella on all field trips)

Week 6 May 3-9 Sight Recognition

Walk Reading: Lohmann, A floristic study of The Evergreen State College

DUE: Take home assignment on the web.

Mon, May 4

6-8 pm	Plant Walk: The common trees and shrubs of The Evergreen State College forest reserves. (Wear hiking shoes, bring raingear and art supplies)
8-10 pm	Lab: Lamiaceae & Keying Quiz

Weds-Fri, May 6-8 Student Led Plant Walks for **SYNERGY CONFERENCE**
(optional)

Saturday, May 9th

9 am – 4 pm **PRAIRIE APPRECIATION DAY** (optional)

Saturday, May 9th Volunteer at **PRAIRIE APPRECIATION DAY** (optional)

Week 7 May 10-16 Nomenclature

Lecture Reading: Simpson, *Plant Systematics*, Chap. 16 Plant Nomenclature
And Diggs and Lipscomb, "What is the Writer of a Flora to Do: Evolutionary
Taxonomy or Phylogenetic Systematics?"

Mon, May 11

6-8 pm

Guest Lecture by Luke Painter: The Phylocode

8-10 pm

Lab: Ericaceae & Scrophulariaceae

Fri, May 15

12 noon–5 pm

Optional Prairie Collecting Trip with Heron Heartsun,
Natural History Fellow (meet in Lab I rm 1060)

Saturday, May 16

9 am–5 pm

Optional Field Trip: Fort Lewis Prairie Collecting Trip
(Meet in 1 hour parking in Lot B at 8:45 am)

Week 8 May 17-23 Group Research Project

Workshop Reading: Zika, P. 2006. "Help Collect Noxious Weeds in
Washington," *Douglasia* Winter: 19-25.

Mon, May 18

9 am-5 pm

Optional Prairie Collecting Trip with Heron Heartsun,
Natural History Fellow (meet in Lab I rm 1060)

6-8 pm

Group Research Project Workshop: Mount Specimens

8-10 pm

Lab: Asteraceae & Poaceae

Saturday, May 23 or Sunday, May 24

FIELD TRIP: Arrange to go for a plant walk with one or more of
your classmates to practice keying and sight recognition.

Week 9 May 24-30

DUE: May 28th-Prairie botanical illustrations (sign or initial each and include year)

Mon, May 25

NO CLASS – MEMORIAL DAY HOLIDAY

Weds, May 27

4-6 pm best time to deliver your botanical illustrations
Lab II rm 3272

Thurs, May 28

12 noon–5 pm Optional Specimen Preparation with Heron Heartsun,
Natural History Fellow (meet in Lab I rm 1060)

Fri, May 29

Student Led Plant Walks for the **SCIENCE CARNIVAL**

Sat, May 30

Student Led Plant Walks for the **SCIENCE CARNIVAL**

Week 10 May 30-June 6

Wrap Up

DUE: portfolios including final self-evaluation Wednesday, June 3rd by 5pm.

Mon, June 1

6-8 pm

Final Exam

8-10 pm

Panel on Careers in Floristics (bring cookies to share)
(Meet in SEM II A2107)

Required papers and portfolio materials:

- field journal with entries on all field trips (including outside of class)
- quizzes and final exam on sight recognition and keying unknowns
- portfolio of 5 prairie plant illustrations (scratchboard &/or pen & ink)
- prepared herbarium specimens (five or more; leave specimens in Lab I rm 1060; for portfolio type a list of the specimens you prepared with species name, collector and collection #)
- take home exam (minimum 7 typed, double-spaced pages, plus biblio)
- take home web assignment
- self evaluation (required for credit in program)

EVALUATIONS WEEK: June 8-12 Individual Conferences with Faculty

Please bring your faculty evaluation to your evaluation meeting.

Credit Equivalencies: 4 Floristic Research Methods
(6 upper division science credits for undergraduates)