Course Summary:
This course introduces the broad area of plant diversity. You will be provided with a basic understanding of plant classification and instructed on how to identify vascular plant families and many local plant species. The course will emphasize plant families of California but also includes many worldwide families of ecological and economic importance. The course also includes some phytogeography.

Required Materials:
- Hand Lens (10x or 15x)
- Plant Press (check out from Biology Stockroom)
- Dissecting probe (needle style)
- Clippers
- Plastic bags
- Field Notebook (“Rite-in-the-Rain” books are best)
- Good, fine-tipped dissecting tweezers
- Digging tool (hand trowel)

Grading:
- Plant Collection (240 points) (WITH field notes! – NO credit given if field notes are not included)
- Field Notebook (50 points) (original – DO NOT copy over!!)
- Three keying quizzes (10 points each, four given, low score dropped)
- One final lab project (50 points)
- Two mid-term exams (100 points each)
- One COMPREHENSIVE final (150 points)

TOTAL: 720 points
The grading scale will be 90-100% = A, 80-89% = B, 70-79% = C, etc. Occasional exceptions will be made to this policy if you show substantial improvement from the midterms to the final examination.

FIELD TRIP POLICY
The field trips comprise a major component of the course and participation in them is mandatory. Material included in the field trips will be included in the midterm and final exams. Field trips will not be canceled due to rain – come prepared! You can miss ONE field trip, if you miss more than one, your grade will be lowered by one letter. The following dates are meant to be “carved in stone”, however, are subject to change in the event of extenuating circumstances (i.e. changes are very unlikely).

FINAL LAB PROJECT:
Each student will prepare an edible dish to share with the class and identify a list of all the plant taxa included in the dish at the family, genus, and species level. For example, a pie crust would have to include Triticum aestivum (wheat), Beta vulgaris (sugar beet), and whatever plant compounds were contained in the butter (mostly likely includes a plant dye), margarine, or vegetable shortening. Choose one ingredient in the dish and provide a detailed report (about 5 pages, at least three references) that will include the following information: Names and systematic relationships of the taxon (genus, specific epithet, family, order), family characteristics, geographic distribution, and historical, economic and/or medicinal use. Each student will give a brief (5 minute) presentation on their dish and turn in their written report. I will provide all cutlery, plates, and glasses.

PLANT COLLECTION:
Each student will turn in a plant collection of 60 different species, no more than five from any one genus. No more than 20 non-native plants can be included. Ten of the species in the collection must be from the same family.

Grading of the collection:
Each specimen is worth four points.
- Two points for correct identification. The more obvious the misidentification, the more points will be removed. For example, if the family is wrong, no credit will be given. If the misidentification is at the species level, partial credit may be given.
- Two points for the quality of the specimen. Does it have all parts necessary for identification? If herbaceous, does it include some underground material. Is the label information complete?

Field Notes:
Write your field notes BEFORE you start to collect! Record the following information:
- date
- your name and who is with you
- location description. Provide enough detail that the site can be relocated. GPS coordinates (Lat/Long) and/or 7.5’ Quad Name with Township and Range, ¼ section. GPS or both preferred.
- ecological characteristics of the collection site.
- any notes about the individual plants or population. Colors often fade after drying, so it is a good idea to include flower colors.
- assign consecutive numbers to each plant that you collect. Either tag the plant (best) or make sure the information is recorded on the newspaper blotter. Use the same numbers in your field notebook.

Selection of collection material:
Carefully survey the population to see if the collection will affect the growth of the population. As a general rule, DO NOT collect any specimen that is part of a population of less than approximately 50 individuals. If you KNOW the plant is non-native, collect to your heart’s content! Select individuals that are generally representative of the population and include some range of variation, i.e. more than one specimen.

Plant collection “dos and don’ts”
- Press your plants while they are still fresh.
- It is important for identification to include vegetative, flowering, fruiting, and underground portions of the specimen.
- If the collection of underground material is not possible, be sure to make notes about its appearance.
- Be sure to collect extra parts for dissection!
- Clean any soil or debris away from the roots – please do NOT do this in the lab sink!
- Lay the plant on the newspaper, the way you want it to look when it is dried. Be sure to leave room for the label. Show both sides of the leaves, make sure relevant floral morphology is visible.
- If the plant is too big to press (e.g. trees and shrubs), collect a representative branch with leaves and flowers
- Dry the plants very soon after pressing, otherwise they will mold, discolor, and contaminant the herbarium.

Label Preparation:

PLANTS OF CALIFORNIA

Ericaceae

Arctostaphylos manzanita Perry
Butte Co: Lassen National Forest, Hwy, 32, Joe Blow Campground, elevation 4500 ft. Found with Ceanothus ceanothoïdes X. Y. Smith in understory of mature open Pinus ponderosa community. SE qtr. of sec. 14, T 35’N, R 4 W’ E. (better yet provide lat/long also)


HERBARIUM OF CALIFORNIA
STATE UNIVERSITY, CHICO

COURSE SCHEDULE

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<thead>
<tr>
<th>DATE</th>
<th>LECTURE</th>
<th>LAB</th>
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<td>January 29</td>
<td>Introduction to plant taxonomy and systematics</td>
<td>Intro. to plant collection</td>
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<td>Historical perspective</td>
<td>Course requirements</td>
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<td>Chapters 1-3</td>
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<td>January 31</td>
<td>Vegetative Morphology</td>
<td>Introduction to keying</td>
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<td>Chapter 4</td>
<td>Check out Plant Presses</td>
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<td>February 5</td>
<td>Floral Morphology</td>
<td>More intro. to keying</td>
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<td>Chapter 4</td>
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<tr>
<td>February 7</td>
<td>Floral Morphology</td>
<td>More intro. to keying</td>
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<td>Chapter 4</td>
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<td>February 12</td>
<td>History of the Calif. Flora</td>
<td>Keying to family</td>
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<td>California Plant Communities</td>
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<td>Hand outs</td>
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February 14  Molecular Systematics  
  Systematic Techniques  
  Chapter 5  
  Keying quiz  
  Keying

February 19  An introduction to green plants  
  Chapter 7  
  Field Trip

February 21  Lycophytes, Ferns, etc.  
  Chapters 7 and 8  
  Keying

February 26  Amborellales  
  Nymphaeales  
  Austrobaileyales  
  Field Trip

February 28  Piperales  
  Magnoliidae  
  Laurales  
  Keying

March 5  MONOCOTS  
  Alismatales  
  Liliales  
  Asparagales  
  Field Trip

March 7  Dioscoreales  
  Commelinales  
  Poales  
  Keying

March 12  Poales  
  Zingiberales  
  Field Trip

March 14  MIDTERM #1  
  Keying quiz  
  Keying

MARCH 18-22  SPRING BREAK

March 26  EUDICOTS  
  Ranunculales  
  Proteales  
  Field Trip

March 28  CORE EUDICOTS  
  Caryophyllales  
  Polygonales  
  Santalales  
  Saxifragales  
  Keying

April 2  ROSID CLADE  
  Vitales  
  Geraniales  
  Field Trip

April 4  EUROSIDS I  
  Oxalidales  
  Keying

April 5-7  Weekend Field Trip (not mandatory, but strongly recommended!)

April 9  Celastrales  
  Malpighiales  
  Field Trip

April 11  Fabales  
  Rosales  
  Keying
Learning Outcomes: A student completing this course will have the following skills.

- Describe the basic structural differences between bryophytes and vascular plants.
- Distinguish from one another the four divisions of seedless vascular plants.
- Understand what distinguishes the divisions of living gymnosperms from one another.
- Identify and learn a use for each of at least 10 different gymnosperms.
- Understand the basic differences between angiosperms and gymnosperms.
- Know the characteristics of flowers associated with specific types of pollinators.
- Know the functions of a herbarium and the techniques of preparing herbarium specimens.
- Have skills in plant collection and identification.
- Be able to apply plant systematics in other contexts including conservation and information to a general audience.
- Trace evolutionary relationships among the major plant groups.
- Demonstrate a working knowledge of the basis of phylogenetics and how this informs plant classification.
- Understand the general principles of plant classification, taxonomy, and nomenclature.
- Be able to identify either on sight or through keying, California species.
- Knowledge of the most economically important species.

Academic dishonesty in any form will be immediately referred to Student Judicial Affairs. This includes plagiarism, failing to provide proper credit for an idea, copying or borrowing coursework from another student, paraphrasing someone else’s idea without acknowledging the source, copying answers from your text, etc. Another form of plagiarism involves copying text from another source, modifying a few words, and claiming it as your own. There will be no credit awarded for any assignment that involves even a hint of plagiarism. Go out of your way to not be tempted and to not tempt anyone else. There are no group assignments in this course. Every word you write should be your own. Additional information on academic integrity is available in the Code of Students Rights and Responsibilities, which is available from www.csuchico.edu/sjd.

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