Biology 442/542 Systematic Botany

Professor: Dr. Bitty Roy
Lectures: Huestis 129, MF 12:00-12:50 (see plant walks for Weds lecture)
Laboratories: Huestis 129, MW 2:00-4:50

Plant Walks: **Wednesdays 12-1;** leave promptly at 12 from the Autzen Stadium bridge over the Willamette at the N end (Autzen side). This is a good way to reinforce what you are learning in class and will help you to get to know the local plants. We will walk a route that has more than 15 years of plant phenology data (when things start to flower). These data are useful for seeing the effects of climate change.

Office Hour: 10-11 on Fridays and by appointment
   Room 461b Onyx Bridge (enter 461 and go through a pocket door to the left)
   Tel. 346-4520
   E-mail: bit@uoregon.edu **Please use 442/542 in the subject header**

Graduate Teaching Assistant: Dan Thomas, danchurchthomas@gmail.com, office hour 10:00 Tuesdays, or by appointment, in 129 Huestis (our classroom)

Undergraduate Peer Tutors: Robbie McNulty and Neal Deghetaldi

Class Materials will be available on **Blackboard.** I will post the lectures the day they are given.

**Lectures, Labs & Reading Assignments**

**Week One**
Mon 1 Apr  L#1 Introduction pp. 1-16
   Lab=Basal Families: describing flowers (pp. 165 & 468-487)

Weds. 3 Apr  L#2=Plant Walk (meet at Autzen bridge, far side, at noon)
   Lab=Basal Families: describing leaves (pp. 461-467)

Fri. 5 Apr  L#3 Angiosperm characters and origins pp. 176-178


**Week Two**
Mon 8 April  Guest lecture by Tobias Policha on *Dracula* orchid pollination
   Monocots (pp 200-202)
   Mon Lab=**Quiz** In lab, monocots I

Weds 10 April  L#5=Plant Walk (meet at Autzen bridge, far side, at noon)
   Lab= keying exercise Berberidaceae & Ranunculaceae  (read in advance:  pp. 12 & 606-607)

Fri. 12 April  L#6 Why are flowers so variable? Selection by pollinators pp. 574-576
Families of the week: Monocots I: Liliales (Liliaceae pp. 213, 215; Melanthiaceae see my notes and APG3), Asparagales (Asparagaceae see my notes and APG3; Amaryllidaceae pp. 220, 222; Iridaceae pp. 224-225; Orchidaceae pp. 226-228), Eudicots: Ranunculales (Berberidaceae pp. 278-279, Papaveraceae pp. 280-281, Ranunculaceae pp. 280, 282)

Week Three
Mon. 15 April L#7 Mating (=Breeding) Systems pp. 576-580
Lab= Quiz In lab: new Families of the week

Weds 17 April L#8 =Plant Walk (meet at Autzen bridge, far side at noon)
Lab = Families of the week

Fri. 19 April L#9 Why are fruits so variable? Selection for Dispersal pp. 489-493

Saturday 21 April  Field Trip to Dorris Ranch (Required) 11:00-4:00


Week Four
Mon. 22 April L#10 Why are leaves so variable I: selection by the environment
Lab= Quiz then the families of the week

Weds. 24 April L#11 =Plant Walk (meet at Autzen bridge, far side, at noon)
Lab = Families of the week

Fri. 26 April L#12 Overview of orders and review for exam

Families of the week: Geraniales (Geraniaceae pp. 347,350), Curcurbitales (Cucurbitaceae pp. 341,343), Fabales (Fabaceae pp. 328-330), Fagales (Fagaceae pp. 344,346, Betulaceae pp. 344,345)

Week Five
Mon. 29 April L#13  Mid-term Exam
Lab = QUIZ & new families of the week

Weds. 1 May L#14=Plant Walk (meet at Autzen bridge, far side, at noon)
Lab = Families of the week

Fri. 3 May L#15 Why are leaves so variable? II. Selection by other organisms

Families of the week: Malpighiales (Euphorbiaceae pp. 315, 319, Violaceae pp. 323,325, Salicaceae pp. 322, 324), Rosales (Rosaceae pp. 334-335), Brassicales (Brassicaceae pp. 357-359)
Week Six
Mon. 6 May  L#16 Inflorescence types
Lab= Quiz  Families of the Week

Weds. 8 May  L#17=Plant Walk (meet at Autzen bridge, far side, at noon)
Lab= Families of the week

Fri. 10 May  L#18 Phylogenetic Systematics I. (pp 17-48; 585-609)

Sat 11 May  **Coast Field Trip** (Required) 8:00-6:00


Week Seven
Mon. 13 May  L#19 Phylogenetic Systematics II. (pp 17-48; 585-609)
Lab= Quiz then new families of the week

Weds. 15 May  L#20=Plant Walk (meet at Autzen bridge, far side, at noon)
Lab = Families of the week

Fri. 17 May  L#21 Parasites, then Nomenclature  pp. 611-626
Saturday 18 May Volunteer to help setup the wildflower show at Mt. Pisgah Arboretum
Sunday 19 May:  Wildflower festival at Mt. Pisgah


Week Eight
Mon. 20 May  L#22 = rest of Nomenclature lecture, then families of the week
Lab= Families of the week, except Asteraceae  NO QUIZ TODAY—see WEDS. instead

Weds. 22 May  L#23—MEET IN HEUSTIS! Asteraceae
Lab= **Field Trip** to Horse Rock Ridge (includes quiz)  2-6 pm

Fri. 24 May  L#24 = Species and Speciation  (pp. 649-665)

Week Nine
Mon. 27 May    HOLiDAY no class

Weds. 29 May   L#25 = Plant Walk (MEET IN HEUSTIS CLASSROOM). Quiz will be
during walk.
Weds. 29 May Lab= Families of the week

Fri. 31 May    L#26 Grasses and Grasslands

Families of the week: Monocots II, Poales (Typhaceae pp. 205-206, Juncaceae pp. 208,
Cyperaceae pp. 209-210, Poaceae pp. 215-218)

Week Ten
Mon 3 June     L#27 Grasses
Lab=Poaceae

Tuesday 3 June: L#27 Plant walk leaving from Huestis 12-12:50 (odd day and time due to
practical tomorrow—this is a review session).

Weds 5 June    no lecture due to Lab exam in the afternoon.

Lab Practical!!! The room will be open from 2 until 6 pm, bring a snack and a
drink. Open book and open notes.
Exam advice: count parts, make lists of families with various plant part numbers, check ovary
position, look for stipules, sheathing, latex and smell.

Fri 7 June     12:00 Plant Family Potluck. There will be prizes, including the grand prize for
the dish with most families in it and a prize for most beautiful. Record number of families to date
is 57 won by Jesse McAlpine in 2012.

FINAL EXAM: Friday June 14 at 10:15 in our normal Huestis 129; graduate student
collections are due at the same time.

Other Course Information
Course Objectives:
Plant systematics is the study of flowering plant diversity. Through the lectures, laboratory
exercises, walks and readings you will learn:
1. How to describe and classify plant diversity.
2. The major features and evolutionary origins of vascular plants.
3. What causes selection on, and variation in, plant characteristics
5. Identification of plants using dichotomous keys.
6. Recognition of important angiosperm families
7. Some of the local spring flora
8. Knowledge of where your food plants come from
Required textbooks: (bring to every lab)
   This textbook includes 1) chapters that you will be expected to read before lectures; and 2)  
   family descriptions that you are expected to read before the lab session. The required readings  
   cover most of the course topics. The book includes a lot of color photographs.
3. The course Packet, which includes the lab worksheets

Not required, but strongly recommended: Pojar and MacKinnon, Plants of the Pacific  
Northwest Coast. Well illustrated (with photos), but with few keys.

Bring to Lab: both text books (Simpson & “Hitchie”), the lab worksheets (in the packet), lab  
supplies, pencil, paper (unlined paper is best for drawings).  
Required lab/field supplies: 10X hand lens and write in the rain notebook.

Field Trips:
There are two required field trips on weekends: Saturday April 20th (Dorris Ranch) from  
11:00-4:00, Saturday May 11 (Coast) from 8:00-6:00; materials discussed in lab and lecture  
will be seen in the field.

There is also a required WITHIN class field trip: Wednesday May 22 to Horse Rock Ridge from  
2:00-6:00.

Field trip Meeting Place: Parking lot behind Onyx Bridge, directly behind the science library  
entrance. Be prompt. We will leave exactly on time.

Bring a snack (and lunch for the two Saturday trips), water, your field book, Flora of the  
PNW=Hitchcock, hand-lens and ruler. Wear long pants (for poison oak & ticks) and either  
hiking boots or tennis shoes. Bring a hat and sunscreen, as well as rain gear.

Important dates:
April 20, Saturday: Field Trip to Dorris Ranch (required)  
April 29, Monday: lecture mid-term  
May 11, Saturday: Coast Field trip (required)  
May 18 Saturday Wildflower festival set up-volunteers needed  
May 19, Sunday Wildflower festival at Mt Pisgah Arboretum  
May 22, Wednesday: Field trip to Horse Rock Ridge  
May 27, Monday: Memorial Day holiday  
June 5, Wednesday: Lab Exam  
June 7, Friday: Potluck in class with prizes, including one for dish with most families in it  
June 14, Friday, 10:15 am: FINAL EXAM

Grading:
Exams will cover subjects and vocabulary presented in lecture or lab, whether that material is in  
the textbook or not. Furthermore, you are expected to know what is in the assigned reading,
even if we don’t cover that material in lab or lecture. Questions may be multiple choice, short essay, fill in the blank, or true/false format. The final exam will be cumulative.

Lab quizzes: There will be a lab quiz every week (usually on Monday) except the first week, and the week with Labor Day (dead week). The lab quizzes will focus on Family recognition and keying; points will be taken away for misspelling family names. I allow you to drop one lab quiz.

Undergraduates (452):

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<th>Component</th>
<th>Percentage</th>
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<td>Lab quizzes (10-15 questions x 8 quizzes*)</td>
<td>20%</td>
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<tr>
<td>Lab exercises (1-2 each week, variable number of points)</td>
<td>20%</td>
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<td>Lab Practical</td>
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<td>Midterm</td>
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<td>Final exam</td>
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<td>Field trip attendance</td>
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* the lowest grade will be dropped

NOTE: If your grade on the final lab exam is better than the average of your quiz grades, the final lab exam grade will count for the entire 40% of the lab practical grade (quizzes=20% plus lab final=20%).

Graduate students (552): Points available:

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NOTE for Graduate students: If your grade on the final lab exam is better than the average of your quiz grades, the final lab exam grade will count for the entire 30% of the lab practical grade.

**Extra credit** can be gained by catching me making spelling errors with plant families, genera and species. I take points away when you misspell words, so to be fair, you should be able to catch me if I make an error.

**Graduate Student Collections:**

You need to make a collection of plants for this class. Because there is large variation in what you know and also what might be most useful you, I need to meet with each of you individually to tailor your project. The basic project is to collect and identify 20 specimens identified to
species; these need to belong to a minimum of 10 families (at least two need to be Poaceae and one Asteraceae). Here are a couple of ways this project was modified the last time I taught the course to make it suit the students better:

-- One student who’s PhD work was on grass pathogens, but who had little experience with plants, elected to collect and identify 20 grasses.

-- Three students with considerable PNW botanical experience collaborated to survey the Riverfront area of the UO campus.

The plants need to be collected, pressed, and labels made (I will email you a format for the labels). Note that the labels need to have detailed location information on them. For this you need to identify the location on the map you will receive with the labels, a GPS point is excellent and we may have one in the lab you can use (ask). In addition, each specimen must come with a page that details how you keyed it out (the progression of couplets). This will enable us to determine where you went wrong in the keys, if you did.

**STUDENTS WITH SPECIAL NEEDS**

University of Oregon in general, and the instructor in this course, work to support students with special needs. If you have special needs, such as test accommodations, note-taking, and sign language interpretation, please contact Disability Services so that their personnel and I can work together to help you learn comfortably in this class. The Disability Services office is located in 164 Oregon Hall. Telephone 541 346-1155. TTY: 541 346-1083. Fax 541 346-6013. On the web: http://ds.uoregon.edu. Email: disabrv@uoregon.edu

If English is your second language and you find understanding my speech difficult, please contact me. I may be able to help you.

**MISCELLANEOUS COURSE POLICIES:**

If you miss a class, it is your responsibility to contact a classmate to get lecture notes.

Make-up exams will be allowed only if arranged in advance, and only in cases of illness or other documented emergencies such as a death in the family. Exams must be made up no later than the class period following that in which the exam was given (because exams will be returned to the whole class at that time). Documentation of the emergency or illness is required.

I expect students to maintain high standards of academic integrity during my classes, and they nearly always do. Penalties for cheating range from receiving a zero score on the relevant test, quiz or exercise to receiving an F grade in the class. Mutilation of library materials or other shared materials for any exercise associated with this class will result in an F grade for the entire class.

Electronic devices (cell phones, graphing calculators, PDA’s, electronic game, radio, CD player, etc.) may not be used during a quiz or test. Any electronic device used during a test will be confiscated.