

BIOL 325, Plant Systematics, Fall 2014

Course Web: <http://herbarium.millersville.edu/325.php>

Lecture: T & R 1-1:50, Roddy 258

Lab: T 2-4:50, Roddy 268

Instructor: Dr. Chris Hardy
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Office Hrs: Roddy 271, W 2-3, R 2-4, F 10-12
Web: <http://herbarium.millersville.edu/hardy.php>

Required:

1. Rhoads, AF, and TA Block. 2007. *The Plants of Pennsylvania: An Illustrated Manual*, 2nd Edition. University of Pennsylvania Press. (ISBN: 0-8122-4003-0)
2. Hand magnifying lens (10x is appropriate, but not higher than 20x).
3. Ca. \$3-4 for field trip entrance fee.
4. Preparedness for the out-of-doors, rain, snow or shine, during all Tuesday meetings of lecture and laboratory. Be prepared to depart to the field during lecture time on Tuesdays.

Suggested:

1. Three-ring binder(s) in which to insert lecture and lab handouts, and notes taken on looseleaf paper.
2. Camera.
3. Hand pruners.

Objectives: At the successful completion of BIOL 325, a student should be able to

1. list key characteristics of and recognize major vascular plant taxa, as well as selected genera;
2. list characteristics of larger groups such as vascular plants, lycophytes, ferns, gymnosperms, angiosperms, dicots, and monocots; to be able to draw a cladogram showing how these larger groups are related to one another;
3. use and construct dichotomous keys to plant taxa;
4. use a hand lens and a dissecting scope to dissect and make detailed observations of plant parts;
5. outline the basic hierarchy of taxonomic ranking;
6. list and explain the fundamental rules of botanical nomenclature;
7. explain what herbaria are and what their functions are;
8. outline the basic tenets of cladistics and the implications of cladistic thinking for taxonomy;
9. list the types of data collected by systematists for the construction of classifications.

Grading: Final letter grades are earned on basis of percentage of total points available as follows (A = 93-100%; A- = 90<93; B+ = 87<90; B = 83<87; B- = 80<83; C+ = 77<80; C = 73<77; C- = 70<73; D+ = 67<70; D = 63<67; D- = 60<63; F = <60%).

Lecture Exam 1	50
Lecture Exam 2	50
Final Lecture Exam (1/3-1/2 cumulative)	75
Plant Collection Project (Appendix 1)	50
Lab quizzes / keys	60
<u>Lab Final (cumulative)</u>	<u>50</u>
Total points possible	335

Special Needs: Please let me know if you have any disabilities or special needs that might affect your performance in this course. I will do my best to accommodate you.

Readings: Will be announced in class. You are responsible for all content in the assigned readings.

Attendance: Attendance of laboratories and field trip(s) is required.

Attendance of lectures is optional, but you are responsible for all information discussed or homework assigned in class.

Missed lecture exams may be made up as an essay exam with a valid excuse (doctor's note or proof of family emergency).

There will be no make-ups for missed lab quizzes.

Honesty: No cheating on tests, plagiarism, or cut-&-pasting from electronic sources on any assignment.

Lecture Schedule

<u>Lecture Topic</u>			<u>Special Comments / Your Notes</u>
Week 1:	Aug 26 & 28	Topic 1 - Introduction	
Week 2:	Sep 02 & 04	Topic 2 - Overview of Plant Taxa	
Week 3:	Sep 09 & 10		
Week 4:	Sep 16 & 18		
Week 5:	Sep 23 & 25	Topic 3 - The Code	
Week 6:	Sep 30 & Oct 02	Exam 1	
Week 7:	Oct 07 & 09		
Week 8:	Oct 14 & 16	Fall Break Topic 4 - History - Plant Systematics	
Week 9:	Oct 21 & 23		
Week 10:	Oct 28 & Oct 30	Topic 5 - Cladistics	Plant Collection Project due Oct 31
Week 11:	Nov 04 & 06	Exam 2	
Week 12:	Nov 11 & 13	Topic 6 - PA Floristics	
Week 13:	Nov 18 & 20		
Week 14:	Nov 25 & 27	Topic 7 - Molecular Systematics T-day Recess	
Week 15:	Dec 02 & 04		
Week 16:	Dec 09 (T)	Final Exam, 12:30-2:30	

Lab Schedule

<u>Lab Topic</u>	<u>Notes</u>
Week 1: Aug 26 Basal Dicot Grade	
Week 2: Sep 02 Monocots, part 1	Quiz 1
Week 3: Sep 09 Basal Eudicot Grade	
Week 4: Sep 16 Rosids, part 1	Quiz 2
Week 5: Sep 23 Asterids, part 1	
Week 6: Sep 30 Monocots, part 2	Quiz 3
Week 7: Oct 07 Rosids, part 2	
Week 8: Oct 14 Fall Break	Fall Break
Week 9: Oct 21 Asterids, part 2	Quiz 4
Week 10: Oct 28 Rosids, part 3	
Week 11: Nov 04 Asterids, part 3	Quiz 5
Week 12: Nov 11 Pteridophytes	
Week 13: Nov 18 Monocots, part 3	
Week 14: Nov 25 Gymnosperms	Quiz 6
Week 15: Dec 02 Lab Final Exam	Lab Final Exam

Appendix 1. Plant Collection Project

Your job is to make a collection and preparation of 10 herbarium specimens (to total 10 separate species) from wild plants. 5 of these must be from Millersville, with our collective goal of conducting the first inventory and mapping of the Borough's wild flora. The other 5 specimens can be from any wild area in the world. There can be no collections from the MU Bush or from a population that we identified to species together as a class, such as during a lab. Also, if you stray off of campus, you may not collect on private property without the permission of the owner, or in any state or national park without the proper collecting permits from the park office / service. The project is worth 50 pts and all materials (the physical, mounted specimens and their mapping on www.wikiplantatlas.org/millersville/, hereon as WPA) are due by 4 pm on Halloween (late projects deducted 10% per 24 hr period late).

A. Important Notes regarding Academic Honesty:

1. Work to identify these alone.
2. Do not team up with others to collect the "same" things. That is, you can go out into the field with a classmate as a travel companion, but then you cannot collect the same species from those localities, and you cannot help each other with the identifications.
3. Do not collect any plant from a garden or otherwise from cultivation.

B. Important Procedural Notes:

1. You will not get credit for plants collected within 6 m of a trail or for collecting the only plant in a population or plants from a small population (environmentally responsible collecting is important).
2. You must keep a notebook that describes all necessary information and this information must be taken at the time of collection. Your memory is not good enough otherwise and the Herbarium does not want specimens with poor or faulty information recorded about them.
3. Your newspaper sheets should be labeled with your name and collection number (minimally) in the lower right corner on the outside so I can see them. Otherwise I will not accept them for drying.

C. Each specimen is worth 5 pts as follows:**1. WikiPlantAtlas.org Entry (2 pts)**

- a) *Accuracy of pushpin placement
- b) *Completeness and accuracy of information (including DBH for trees or tall shrubs)
- c) *Must also match the information on the herbarium specimen label.

2. Herbarium Specimen (3 pts; unmounted, unlabeled or not dry glue/specimens receive no credit).

- a) *Is the specimen fertile?
- b) *Is the label in the lower right corner, fully adhered, and on archival acid-free paper?
- c) *Does the label contain all information for all fields requested from WPA? Follow the format and instructions for making labels in WPA user's manual, but be sure to add things like family, species author, etc. because these are not optional for your project. Use the template file labels.doc linked from the manual. There is a sample label in that document that shows you just how your label should be. Once you have prepared all of your labels using this file, rename it with your last name as follows: smith.doc, and then come by my office hours with the file on flashdrive in order to print them onto acid-free paper. You will need at least 18-24 hours for the glue on your herbarium specimens to dry.
- d) *Is the specimen sufficiently glued or otherwise adhered to the herbarium sheet? Woody stems will take more glue or thread on thick stems.
- e) *Was the specimen dried properly in a press (i.e., not wrinkled, etc.)?
- f) *Does the specimen fit the sheet (it should not hang-off of the sheet)?
- g) *Is the specimen properly identified to family, genus and species?
- h) *Did you show care to have both upper and lower leaf surface displayed?
- i) *For herbs: were roots collected?
- j) *Did you show care to show the flowers (multiple flowers, for flowers greater than 5 mm diam have one of which is partially dissected)?

3. Fieldbook Check (0-5 pt deduction): I reserve the right to ask for and check through your field notebook and to deduct up to 5 points if it is not complete.