

Botany 3130 Morphology of Plants, Algae, and Fungi Fall 2017 Syllabus

Lecture: M/w/F 8-8:50 N 210
Lab: W 9:00-11:50 N 210
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Course description

Botany 3130 is a class about anatomy and morphology of plants. We will explore the wide array of shapes and structures of plants along with briefer introductions to algae and fungi, emphasizing the use of microscopes. Botany 3130 satisfies the departmental diversity requirement and can be used for upper division electives or as a course in the botany concentration. Prerequisites include BIOL 1050 and BIOL 1150 or equivalents.

I will give lectures, we'll read and discuss papers, and apply these concepts in the lab. Please check the Blackboard page for posted lectures, announcements, and other information. Labs for Plant Morphology will involve a LOT of time working with a microscope to identify morphological and anatomical structures.

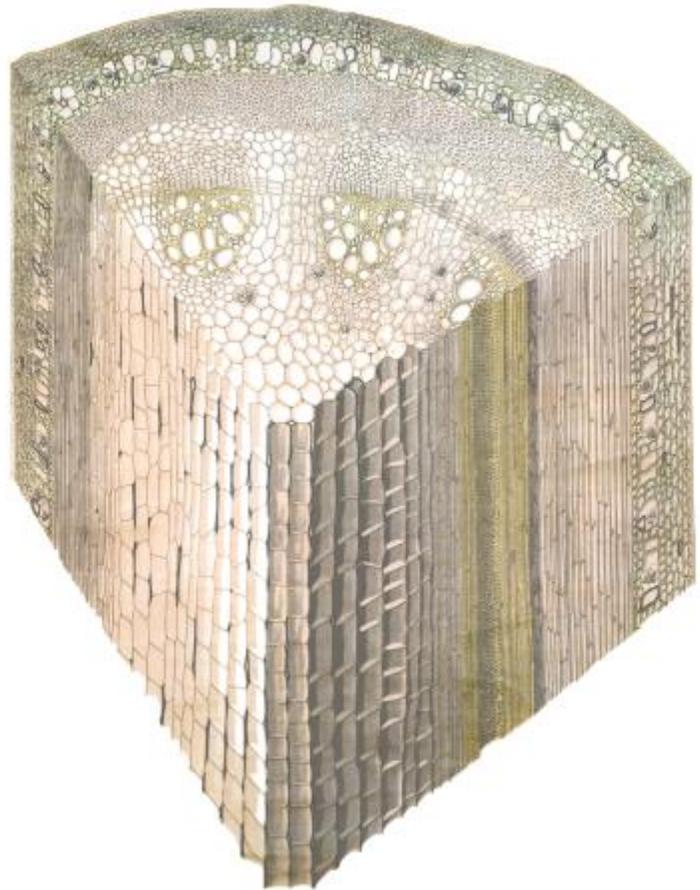
One key tool you'll need to procure is a notebook with blank (unlined) pages. This will be to collect your lab notes, scientific drawings, and reflections. I have also had students successfully compile digital/analog or fully digital lab notebooks. You will earn credit for investing effort into it throughout the semester. My favorite are softback Moleskine ones available at the bookstore and many other places, but many things could work.

Major learning objectives

1. Know common or "typical" morphological and anatomical structures of plants, including detailed understanding of plant cellular structure and contents (especially plastids), the cell cycle, and a comparative knowledge of major cell types
2. Learn about the diversity of "plant" morphologies and their evolutionary history, including major synapomorphies and sexual structures at organ, tissue, and cellular levels
3. Understand the functional nature of plant morphological diversity, focusing on organ, tissue, and cellular structure and composition
4. Become proficient with the use of stereo and compound microscopes along with basic specimen preparation and staining
5. Develop professional communication skills in multiple contexts

Suggested Readings

I will hold you responsible for only the concepts and content I present during lecture and lab, and because there are no required readings. Additionally, we will be reading and discussing several scientific articles this semester. I will provide these via Blackboard and we will use



google docs to work together. Many students find books to be great learning resources, and I will be drawing lecture content from several, including:

Bell. *Plant Form: An Illustrated Guide to Flowering Plant Morphology*

Raven, Evert, and Eichhorn. *Biology of Plants*

Graham, Graham, and Wilcox. *Plant Biology*

Beck. *An Introduction to Plant Structure and Development*

Esau. *Anatomy of Seed Plants*

Judd, et al. *Plant Systematics; a Phylogenetic Approach*

Assessment

To do well in Botany 3130, you will need to come to class and participate actively. In addition, you must be diligent in your studying and group project construction. As with most biological fields, you will have to master a new vocabulary and practice learning to see patterns which will speed and deepen your comprehension.

Quizzes and exams are opportunities for you to convince me you know the material. In an exam, you need to articulate a correct answer. If you haven't articulated an answer previously (practicing in a study group, writing it, etc.,) you will have a more difficult time doing it during exam time. Exams will cover the concepts from lecture and lab, and will be multiple choice with matching, short answer and/or diagram questions. You may not leave the room during an exam without my permission. You must turn off and put away cell phones and remove hats during exams. If you arrive late, after someone has finished the exam and left the room, you will not be able to take the exam.

You need to notify me prior to missing any exam. I rarely administer exams early, but if you have a serious extenuating circumstance, we may be able to make an arrangement. If an emergency suddenly arises causing you to miss an exam, it is your responsibility to notify me via phone or email as soon as practical. Hospitalization, death of a family member, or other serious events would be valid reason for missing an exam without prior notification. Documentation for why you missed the exam is required if you want to take a make-up exam. Make-up exams are different than the regular exams given to the rest of class.

Late material will lose 25% for each day missed after the deadline. Make-up and late work for the class is possible, but only with an excuse note from some reliable person (hospital, police, etc). You must make arrangements with me to take care of any work needed to be made up.

I'll undoubtedly make a couple of mistakes along the way. If you think I've graded something incorrectly, send me an email and tell me about it and I'll make sure it's right. However, I do have a statute of limitations on regrades: one week from when I return them. September 20 is the census date, which is the last day to drop or add a class. University policy states that September 20 is the last day to choose CR/NC. Consult with your advisor before making your decision.

Grades are based on the percentage of total points earned, and are not "curved."

A	93-100%	C+	77-80%	D-	60-63%
A-	90-93%	C	73-77%	F	0-60%
B+	87-90%	C-	70-73%		
B	83-87%	D+	67-70%	CR	70-100%
B-	80-83%	D	63-67%	NC	0-70%

Expectations related to the learning environment

Students

- a. I expect students to actively participate in class discussion, group activities, and peer-peer teaching.
- b. I expect students to be prepared for class each day.
- c. I expect students to respect each other, me, the environments in which we'll operate, and themselves.
- d. I expect students will not cheat, but if students do so, they will not be surprised by an automatic F for the assignment or a referral to the appropriate disciplinary committee. Cheating is "submitting an in-class assignment for a student who is not present or submitting work that is not your own, but claiming that it is your own original work." Lying is "communication with intent to deceive" and cheating falls into that category.
- e. Please don't allow your phones to distract you from class. Please restrict your computer and internet usage to relevant classroom activities to keep from distracting your classmates or me.
- f. Please discuss with me any circumstances or accommodations you would need so we can ensure that the class is an environment in which you can learn and have fun. Please do so within the first full week of class, but don't hesitate to talk to me at any time about any thing that is impeding your success in class.
- g. You may not eat in the classroom because it is a laboratory, but I will give you breaks, and encourage you to keep the glucose levels up!
- h. Plan ahead and keep up with the assignments; and don't hesitate to talk to or email me if you're having a hard time doing so.
- i. Through this course, we will foster a sense of community as we learn to be better communicators, critical thinkers and citizens. To do this, we must all work to make our class a welcoming and productive place to learn for everyone, regardless of race, ethnicity, sexual orientation, gender identity, age, size, socioeconomic background, religion, spirituality, physical ability, mental ability, or any other aspect of one's identity.

Professor

- a. I will come to class prepared to teach an informative lecture containing information relevant to the learning objectives.
- b. I will strive to help you prepare for your exams by giving you 'signposts' along the way to focus your study.
- c. I will not purposely be sneaky on quizzes or exams, but I have high expectations of everyone, including myself.
- d. I will answer questions respectfully and will begin and end class on time.
- e. I will set policy and strive to be fair to all students.
- f. I will return assignments/tests promptly with useful comments.
- g. I enjoy writing letters of recommendation. Because they are a letter of recommendation I do like to be able to recommend the candidate. As such, I can't usually recommend students unless they achieve a B or better in the class. In addition, if you only take the class, do well and never come talk to me, I cannot recommend you either. What would I say? Writing only 2-3 sentences isn't a compelling letter! If you do think you will need a letter from a professor get to know that professor.

TUTORING ON CAMPUS – Free tutoring services are available to assist you in most disciplines, including in biology! - Library 112 - (209) 667-3642 - www.csustan.edu/Tutoring

CAMPUS COUNSELING SERVICES – Overwhelmed by the stress of juggling classes and your home life? Our campus offers excellent counseling services to help support you! - MSR 210 - (209) 667-3381 - www.csustan.edu/Counseling/

STUDENT HEALTH CENTER – You have already paid for access to health care on campus. Services include: birth control, flu shots, immunizations, pharmacy, check-ups, HIV testing, TB tests, and doctor's notes for when you are sick! - (209) 667-3396 - healthcenter.csustan.edu

Schedule (subject to change!):

23-Aug	W	Lecture 1: Syllabus, Intros, <i>Lab 1: microscopes</i>		
25-Aug	F	Lecture 2: Grand tour		
28-Aug	W	Lecture 3: Organelles + Algae that aren't "green"	Q1	10
30-Aug	W	<i>Lab 2: Assessing algal diversity on campus</i>		
1-Sep	F	Lecture 4: Green algae		
4-Sep	M	Labor Day		
6-Sep	W	<i>Lab 3: Data collation and report preparation</i>	Algae letter	20
8-Sep	F	<i>Paper 1: Endosymbiosis</i>	Discussion prep+participation (presentation)	35 10(25)
11-Sep	M	Lecture 5: Cell wall basics + Bryophytes	Q2	10
13-Sep	W	<i>Lab 4: Bryophyte diversity</i>		
15-Sep	F	EXAM 1	EXAM 1, Lab notebooks due	60 40+20
18-Sep	M	Lecture 6: Vascular tissue + Ferns and lycophytes		
20-Sep	W	<i>Lab 5: Fern diversity</i>		
22-Sep	F	<i>Paper 2: Homosporous lifecycles</i>	Discussion prep+participation	10 10(25)
25-Sep	M	Lecture 7: The seed + Gymnosperm diversity		
27-Sep	W	<i>Lab 6: Gymnosperm diversity</i>		
29-Sep	F	Lecture 8: Gymnosperm vascular tissues		
2-Oct	M	<i>Paper 3: Chinese redwoods from the Eocene</i>	Discussion prep+participation	10 10(25)
4-Oct	W	<i>Lab 7: Gymnosperm wood</i>		
6-Oct	F	Lecture 9: Angiosperm flowers, gametophytes, fruits 1	Q3	10
9-Oct	M	Lecture 10: Angiosperm flowers, gametophytes, fruits 2		
11-Oct	W	no classes		
13-Oct	F	Lecture 11: More primary wall + Collenchyma		
16-Oct	M	<i>Paper 4: Rafflesia flower development</i>	Discussion prep+participation	10 10(25)
18-Oct	W	<i>Lab 8: Angiosperm morphological diversity + flowers</i>		
20-Oct	F	Lecture 12: More secondary wall + Sclerenchyma		
23-Oct	M	Lecture 13: Roots	Q4	10
25-Oct	W	<i>Lab 9: Angiosperm embryos and fruits</i>	Plant synapomorphy presentations	30
27-Oct	F	EXAM 2	EXAM 2, Lab notebooks due	80 50+20
30-Oct	M	<i>Paper 5: Root or wood paper</i>	Discussion prep+participation	10 10(25)
1-Nov	W	<i>Lab 10: Roots</i>		
3-Nov	F	Lecture 14: Shoots, Q5		
6-Nov	M	Lecture 15: Angiosperm xylem and phloem		
8-Nov	W	<i>Lab 11: Shoot diversity</i>		
10-Nov	F	Veterans' Day		
13-Nov	M	<i>Paper 6: Evolution of root and stem succulence</i>	Discussion prep+participation	10 10(25)
15-Nov	W	<i>Lab 12: Angiosperm wood</i>		
17-Nov	F	Lecture 16: The leaf	Q5	10
20-Nov	M	Lecture 17: The epidermis		
22-Nov	W	<i>Lab 13: Leaf diversity</i>		
24-Nov	F	Thanksgiving holiday		
27-Nov	M	<i>Paper 7: Origin of carnivorous snap-traps</i>	Discussion prep+participation	10 10(25)
29-Nov	W	<i>Lab 14: Poster project work</i>	Poster draft	10
1-Dec	F	Lecture 18: Extravascular cambia + Secretory structures		
4-Dec	M	Lecture 19: Fungal Diversity, Q6	Q6	10
6-Dec	W	<i>Lab 15: Fungal morphology</i>		
8-Dec	F	<i>Paper 8: Fossil fungi</i>	Discussion prep+participation	10 10(25)
11-Dec	M	Poster session	Poster	40
		EXAM 3	EXAM 3, Lab notebooks due	110 60+50
				515 total
				495 total - 1 quiz, 1 paper disc.