Plant Anatomy
Botany 300
Fall 2015

Instructor: Dr. Marisa S. Otegui
Office hours: by appointment
Office phone: 265-5703
Office: B119 Birge Hall or 401A Bock Labs
e-mail: otegui@wisc.edu

Teaching Assistant: Cullen Vens
Office hours: by appointment
Office phone: 608-262-4008
Office: B114 Birge Hall
email: vens@wisc.edu

Required Text:

Beck, C. 2010. An Introduction to Plant Structure and Development. Cambridge University Press, NY; 2nd edition.

Additional required reading material*:

Albersheim, P., Darvill, A., Roberts, K., Sederoff, R., Staehelin, A. 2010. Plant Cell Walls. Garland Science, NY, chapters 1 and 4.

Alberts, B. et al. 2008. Molecular Biology of the cell, (5th edition). Garland Science, NY, pages 604-613.

Buchanan, B., Gruissem, W., and Jones, R. 2001. Biochemistry and molecular biology of plants. John Wiley & Sons, chapter 1.

Esau, K. 1977. Anatomy of Seed Plants (2nd Edition). John Wiley & Sons, New York, chapters 6, 17, and 22.

Judd, W. et al. 2002. Plant Systematics; a Phylogenetic Approach, (2nd Edition), Sinauer Associates, Inc. pages 63-81

Lersten, N. 2004. Flowering Plant Embryology, Blackwell Publishing, chapter 9.

Raven, P.H., Evert, R.F., Eichorn, S.E. 2005. Biology of plants (7th edition). W.E. Freeman and Company, chapter 20.

* PDF files containing the additional required reading material will be made available through Learn@UW (https://learnuw.wisc.edu/). Also, a required laboratory manual and files containing the lectures are available at this site.

Recommended (not required):

Crang, R. & Vassilyev, A. 2003. Plant Anatomy (CD-ROM). McGraw Hill

Evert, R. 2006. Esau's Plant Anatomy. Meristems, cells, and tissues of the plant body: their structure, function, and development. 3rd Ed. Wiley Interscience, Inc.

Grading: final grades will be based

Your best 3 out of 4 quiz scores:	10%
Two midterm exams:	40%
Lab attendance and participation:	10%
Final exam (lecture and lab exams):	15%
Projects	25 %

Quizzes will be given at the beginning of the class. Quizzes will be announced in the immediate previous lecture. Quiz questions may include identification of cell types or tissues on slides projected on a screen or short-answer questions on the function or development of tissues or structures. Your lowest quiz score will be dropped. If you miss a quiz, you will receive a "0", the first of which will be dropped as your lowest score.

Projects will be a semester-long effort in small groups. The goal is to study in depth some aspect of plant anatomy and to write a focused journal-style paper and to present to the class your findings in a presentation. We will provide suggestions for projects but encourage groups to come up with their own ideas. More specific instructions will be provided during the lab sessions.

Lecture and laboratory schedule

Date		Lectures	Laboratory	Readings
Sept.	3	Introduction	General Lab orientation	No readings
	8	Microscopy	Light and electron microscopy	Notes on light microscopy; Alberts et al., p 604-613.
	10	Confocal Microscopy	Fluorescence and confocal microscopy at the Imaging Center	Notes on fluorescence and confocal microscopy
	15	Plant cells/cell division	Plant cells/ Cell division	Buchanan, ch 1
	17	Plant cell growth	Parenchyma	Albersheim et al., ch 1
	22	**QUIZ 1**; Parenchyma, Collenchyma	Collenchyma	Albersheim et al, ch. 4
	24	Sclerenchyma	Sclerenchyma	Esau, ch 6
	29	Epidermis	Epidermis	Beck, ch 8
Oct.	1	Secretory tissues	Secretory tissues	Beck, ch 15
	6	**No lecture**	**Exam I**	Beck, ch 6
	8	Xylem/Phloem	Primary xylem and Phloem	Beck, ch 11
	13	Secondary Xylem I	Secondary Xylem	Beck, ch 11
	15	Special Lecture	Secondary Xylem	Beck, ch 10 and 12
	20	**QUIZ 2**; Secondary Phloem and cambium	Secondary Phloem	Beck, ch 13
	22	Xylem and Phloem function; Cork	Cambium and Cork	Beck, ch 16
	27	Root I	Primary root	
	29	Root II	Root development, adaptations	Beck, ch 16
Nov.	3	Stem I	**Exam II**	
	5	Stem II	Stem	Esau, ch16
	10	**QUIZ 3;** Leaf I	Stem/Leaf	Esau, ch 17
	12	Leaf II	Leaf	Beck, ch 17
	17	Leaf III; Floral anatomy	Leaf	
	19	Floral anatomy and biology	Floral structure	Judd, p 63-81 ; Raven ch 20
	24	Sexual reproduction	Sexual reproduction	Beck, ch 18
	26	*Thanksgiving*	*Thanksgiving*	
Dec.	1	**QUIZ 4**; Sexual reproduction, cont.	Special lab	
	3	Fruit	Fruit; Embryogenesis and seed development	Esau, ch 22
	8	Seed development and structure	Seed structure	Beck, ch 18; Lersten, ch 9
	10	**Project Presentation**	Project Presentation	
	15	**No lecture**	**Exam III**	

PDF files of all lectures and some readings can be downloaded from Learn@UW