Biology 331: Plant Anatomy
Spring 2019

Lecture 9:00-9:50 Tue & Thu, CBB 269

Lab 10:00-11:50 Tue & Thu, CBB 120

Professor Dr. Qiang Sun
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Office hours: 13:00 – 14:00 Mon & Wed
8:00 – 9:00 Fri
Other times by appointment

Textbook James D. Mauseth. 1988. *Plant Anatomy*. Benjamin/Cummings Publishing Company, Inc. San Francisco. Required, rental from University Bookstore

Reference books

Katherine Esau. 1977. *Anatomy of Seed Plants, 2nd Edition*. John Wiley & Sons, Inc. New York.

Ray E. Evert. 2006. *Esau's Plant Anatomy, 3rd Edition*. John Wiley & Sons, Inc. New York.

Richard Crang et al. 2018. Plant Anatomy: A Concept-Based Approach to the Structure of Seed Plants. Springer Nature Switzerland AG, Gewerbestrasse, Cham, Switzerland

Richard Crang and Andrey Vassilyev. 2003. *Plant Anatomy.* The McGraw-Hill Companies, Inc. USA

Bryan G. Bowes. 1996. *A Color Atlas of Plant Structure.* Iowa State University Press, Ames, Iowa, USA

Abraham Fahn. 1990. *Plant Anatomy, 4th Edition*. Butterworth-Heinemann. Oxford, UK.

Useful websites

James D. Mauseth. Plant Anatomy Laboratory Micrographs---http://www.sbs.utexas.edu/mauseth/weblab/

Thomas L. Rost. Plant Biology-Anatomy Images---http://lytta.ucdavis.edu/almagest/main.jsp?cmd=splash&proj=PLB105&group=All+Courses+and+Projects

Dan J. Curtis, Nels R. Lersten, Michael D. Nowak. Photographic Atlas of Plant Anatomy---http://botweb.uwsp.edu/anatomy/

Lab manual Handouts will be distributed weekly

Course materials

Lecture notes, handouts and other course materials will be posted on the D2L course website. Please visit the website frequently.

Prerequisites Biology 101 (General Biology), Biology 130 (Introduction to Plant Biology) or my permission

Course description and learning outcomes

This course focuses on seed plants and provides you with comprehensive, updated information about the organization, development, structure and function of plant cells, tissues and organs. The following learning outcomes are expected to be achieved through the study of this course.

1) Understand basic concepts and terminology in plant anatomy and various structures of seed plants in relation to their development, function and evolution

2) Explain how knowledge of plant anatomy is connected to our everyday life and practices in agriculture and forestry etc.

3) Be familiar with common research methods and techniques in plant anatomy

4) Develop some basic scientific skills for an in-depth investigation on an anatomical topic through reviewing and discussing peer-reviewed literature

Attendance

You are expected to attend and actively participate in all class activities. Missing class will severely hinder your ability to understand subsequent material and perform well on exams. If you miss a lecture, it is your responsibility to borrow notes from your classmate. Missing an exam or lab will lead to zero point for the missed one. Make-up exams or labs are allowed only in case of unavoidable emergencies in which you need to get my approval in advance if possible and provide a written proof later.

Exams

Midterm Lecture Exams (3 times)	300 points (100 points x 3 times)
Lab Assessment (23 times)	345 points (15 points x 23 times)
Final Lecture Exam	100 points
One Individual Project	30 points
One Group Project	25 points
Total Possible Score	800 points

Projects

You will be assigned one individual project and one group project. In order to complete the individual project, you will need to do a literature review on a self-selected, plant anatomy-related topic. You must have my beforehand approval of your topic and are required to give a 15 min PowerPoint presentation on the topic. For the group project, you will need to read a few designated original research papers on a specific anatomical topic and work as groups to focus on

certain aspects of the topic. A classroom discussion session will then be set up for you to present and discuss the topic. Detailed instructions will be given at the assignment.

Grading

Grade	Percent
A	93 - 100
A-	90 - 92
B+	87 - 89
B	83 - 86
B-	80 - 82
C+	75 - 79
C	70 - 74
C-	65 - 69
D+	60 - 64
D	55 - 59
F	<55

Academic integrity

Academic honesty is an essential element to the educational principles of UWSP as well as to this course. Academic misconduct in any form is strictly prohibited by the University regulations. Any violation will result in disciplinary sanction in accordance with "UWS/UWSP Chapter 14: Student Academic Standards and Disciplinary Procedures". Please find the details of UWSP academic integrity policy at http://www.uwsp.edu/admin/stuaffairs/rights/rightsChap14.pdf.

Special needs

If you need course adaptations, accommodations, or any other special arrangements because of disability and/or other medical conditions, please visit the Student Disability Office first to establish a record. After that, please make an appointment with me as soon as possible or see me during my office hours.

Emergency response guidance

In the event of a medical emergency, call 9-1-1 or use Red Emergency Phone. Offer assistance if trained and willing to do so. Guide emergency responders to victim. In the event of a tornado warning, proceed to the lowest level interior room without window exposure. Avoid wide-span structures (gyms, pools or large classrooms). See www.uwsp.edu/rmgt/Pages/em/procedures/other/floor-plans.aspx for floor plans showing severe weather shelters on campus. Get to know at the start of the semester the locations of red emergency phone and severe weather shelters closest to our lecture hall and laboratory. In the event of a fire alarm, evacuate the building in a calm manner. Meet at an instructed location 200 yards away from building. Notify instructor or emergency command personnel of any missing individuals. In the event of active shooting, run/escape, hide or fight. If trapped, hide, lock doors, turn off lights, spread out and remain

quiet. Call 9-1-1 when it is safe to do so. Follow instructions of emergency responders. See UW-Stevens Point Emergency Procedures at www.uwsp.edu/rmgt/Pages/em/procedures for details on all emergency response at UWSP.

Tentative Lecture and Lab Schedule

Week #	Week of	Lecture / lab topic	Chapter(s) in textbook
1	Jan 20	An introduction to plant structure and development; Plant cell - I	1, 2
2	Jan 27	Plant cell - II; Parenchyma and collenchyma	2, 3, 4
3	Feb 3	Sclerenchyma; Review	5, 6
4	Feb 10	Apical meristems; **Lecture exam 1 (02/14)**	10
5	Feb 17	Epidermis; Xylem - I	7, 8
6	Feb 24	Xylem - II, Phloem	8, 9
7	Mar 3	Primary vascular tissue; Secretory structures	11, 14, 15, 16
8	Mar 10	Review and classroom discussion assignment; **Lecture exam 2 (03/14)**	15, 16
9	Mar 24	Stem primary structure; Vascular cambium	13, 17, 18
10	Mar 31	Discussion session; Stem secondary growth - I	13, 15,16
11	Apr 7	Stem secondary growth – II; Review and individual project assignment	18
12	Apr 14	**Lecture exam 3 (04/16);** Periderm	12
13	Apr 21	Root primary growth; Root secondary growth and adventitious roots	12
14	Apr 28	Leaf basic structure; Variations in leaf structure	19, 20, 21
15	May 5	Project presentation, Review	
16	May 12	**Final exam (05/13, Monday)**	