

## Syllabus - Fall 2016

### EEB 424 – Plant Diversity and Evolution

Instructor: Dr. Joe Williams  
 Lab instructor: Harmony Yomai  
 Lectures: Mondays and Wednesdays 9:05 to 9:55 a.m.  
 Lab: Thursdays 3:40 to 6:20 p.m.

Office: Hesler 341; Telephone: 974-6202  
 Office: Hesler 318; Telephone: 974-9371  
 Hesler 427  
 Hesler 202

No.	Date	Day	Subject	Quiz	Bold '87 Chapters
1.	Aug. 17	W	Introduction – Plants and plant diversity		Handout
Lab 1	Aug. 18	R	Introduction; Microscopes, Cyanobacteria		2, 6
2.	Aug. 22	M	Eubacteria versus Cyanobacteria (Blue-Green Algae)		2
3.	Aug. 24	W	Cyanobacteria and Euglenophyta		2, 6
Lab 2	Aug. 25	R	Other algae plus Rhodophyte (Red Algae)	<b>Q1</b>	4, 7, 8, 9
4.	Aug. 29	M	Euglenophyta, Phaeophyta and other Chlorophyll a + c Algae ( <b>Discuss Armstrong ch. 1 and 2 up to p. 58</b> )		4, 7, 8
5.	Aug. 31	W	Rhodophyta (Red Algae)		9
	Sept. 1	R	<b>No Lab – Football game!</b>		
6.	Sept. 5	M	<b>LABOR DAY – NO CLASS</b>		
7.	Sept. 7	W	Introduction to Chlorophyta (Green Algae) ( <b>Discuss Armstrong p. 58 to end of ch. 3</b> )		4
Lab 3	Sept. 8	R	Green Algae - Chlorophyta and Streptophyta (Charales, Coleochaete)	<b>Q2</b>	4, 5
8.	Sept. 12	M	Streptophyta (Charales and Coleochaete)		5
9.	Sept. 14	W	Origin of Land Plants. Hepatophyta (Liverworts)		11
Lab 4	Sept. 15	R	Introduction to Land Plants. Hepatophyta (Liverworts)	<b>Q3</b>	11
10	Sept. 19	M	Hepatophyta and Anthocerotophyta (Hornworts) ( <b>Discuss Armstrong ch. 4, 5</b> )		11
11.	Sept. 21	W	Anthocerotophyta and Bryophyta (Mosses)		11, 12
Lab 5	Sept. 22	R	Anthocerotophyta (Hornworts) and Bryophyta (Mosses)	<b>Q4</b>	11, 12

No.	Date	Day	Subject	Quiz	Bold 87 Chapters
12.	Sept. 26	M	Introduction to Vascular plants, fossils, evolution		13, 20 pp. 469-506
13.	Sept. 28	W	Microphyllphyta (Lycopods) ( <b>Discuss Armstrong ch. 6, 7</b> )		14
Lab 6	Sept. 29	R	Introduction to Vascular plants and ... Monilophyta (Lycopods) <i>Extra long lab</i>	<b>Q5</b>	13 14
14.	Oct. 3	M	Introduction to Monilophytes (Ferns) and fossils		20 pp. 506-523
15.	Oct. 5	W	Psilotales and Ophioglossales (Pteridophyta I)		16, 19
	Oct. 6	R	<b>FALL BREAK – NO LAB</b>		
16.	Oct. 10	M	Arthrophyta (Horsetails), Marattiales (Pteridophyta I)		15, 16
17.	Oct. 12	W	Pteridophyta <b>II</b> (early-divergent Leptosporangiate ferns) ( <b>Discuss Armstrong ch. 8</b> )		17
Lab 7	Oct. 13	R	Early-divergent Monilophytes	<b>Q6</b>	16, 19
	Oct. 14	F	<b>Photo journal due Friday by 5pm</b>		
18.	Oct. 17	M	Pteridophyta <b>III</b> (leptosporangiate ferns)		18, and p. 506 – 523
19.	Oct. 19	W	Ferns summary and introduction to Seed plants		21, 25
Lab 8	Oct. 20	R	Pteridophyta <b>II</b> and <b>III</b> and Ferns summary	<b>Q7</b>	16-18
20.	Oct. 24	M	End Monilophytes; Intro to Lignophytes		21
21.	Oct. 26	W	Intro seed plants: Ginkgophyta		22
Lab 9	Oct. 27	R	Cycadophyta and Ginkgophyta	<b>Q8</b>	21, 22, 25
22.	Oct. 31	M	Coniferophyta ( <b>Discuss Armstrong ch. 9</b> )		23
23.	Nov. 2	W	Gnetophyta and evolution of “Gymnosperms” ( <b>Discuss Armstrong ch. 10</b> )		24, 25
Lab 10	Nov. 3	R	Coniferophyta and Gnetophyta	<b>Q9</b>	23, 24
24.	Nov. 7	M	Anthophyta (“angiosperms”): origin and early evolution		Handout
25.	Nov. 9	W	Anthophyta (vegetative) ( <b>Discuss Armstrong ch. 10</b> )		26
Lab 11	Nov. 10	R	Anthophyta vegetative diversity	<b>Q10</b>	26

No.	Date	Day	Subject	Quiz	Bold 87 Chapters
26.	Nov. 14	M	Anthophyta (vegetative continued...)		26
27.	Nov. 16	W	Anthophyta (fossils, origins)		26
Lab 12	Nov. 17	R	Anthophyta reproductive diversity	<b>Q11</b>	27
28.	Nov. 21	M	Anthophyta (reproductive) ( <b>Discuss Armstrong ch. 11</b> )		27
29.	Nov. 23	W	Anthophyta fossil history (take home quiz)		26, 27
	Nov. 24	R	<b>THANKSGIVING BREAK – NO CLASS</b>		
30.	Nov. 28	M	Anthophyta, summary		26,27
	Nov. 30	W	<b>First study day. No classes meet!</b>		
Lab 13	Dec. 1	R	Final lab/lecture	<b>Q12</b>	27
	Dec. 5	M	<b>Final papers due by 5 pm (our scheduled exam day)</b>		

**This schedule is tentative and subject to change!**

*Aug 26th - Last day to drop without a "W"; Nov. 8th - Last Day to Drop with a "W" (WP/WF);  
Dec. 1 - Last Day for a University Withdrawal*

REQUIRED READING:

*How the Earth Turned Green. A Brief 3.8-Billion Year History of Plants.* 2014, by Joseph E. Armstrong. Chicago U. Press.

IN-CLASS TEXTBOOK (I WILL PROVIDE):

*Morphology of Plants and Fungi*, Fifth Edition, 1987, by Harold C. Bold, Constantine J. Alexopoulos, and Theodore Delevoryas, Harper & Row Publishers, New York.

\*Or, you can buy your own versions online, used.

**GRADING**

	Total
Lab quizzes – 12 @ 10 points ea. – drop one = 110 points*	~38 %
Mid-term photo presentation = 50 points	~21 %
Final illustrated paper = 120 points	~41 %

\*Please note: there are no make-up quizzes.

---

### Grade distribution

A > 92%	C > 72%
A- ≥ 90%	C- ≥ 70%
B+ > 87%	D+ > 67%
B > 82%	D ≥ 62%
B- ≥ 80%	D- > 58%
C+ > 77%	F ≤ 58%

---

## Mid-term photo journal

Prepare a presentation with a **minimum of 6 labeled pictures** that you will take over the course of the first half of the semester. You will do this by taking photos under the microscope and then importing or pasting the photos into a blank Word file. The goal for the mid-term is to learn how to take quality photographs, how to label them in an informative way, and then to get them into a program where you can describe in words what is being shown. For the mid-term project, you are simply getting 6 photos into presentation format, with a short figure legend for each.

Hints about presentation will be given in class. For example, label clearly what you want the viewer to see and make sure to center the featured structure and make it fill the frame (ie. no extraneous material). The legend should have a title, and perhaps a line or two of description, especially if there are labels in the photo. Arrows can be used either with an arrowhead or just a simple line, coupled with a short label. Too much text on the slide can take away from the impact of the picture. Keep it simple!

Your presentation will be graded according to the quality of the photos and the effectiveness of the labeling and framing at calling attention to relevant and interesting aspects of morphology.

## Final illustrated paper

For the final paper, you will review the book we have read (Armstrong's, *How the Earth Turned Green*) in five single-spaced pages, illustrated with 5 (or more) photos of structures that you saw this semester. Choose structures that you think truly made a difference in the evolution of land plant diversity. Take as a question, for example, what are the structures that truly changed the vegetative world that all other land-dwelling organisms depend on? Dr. Joe Armstrong is a structural botanist – his research career was in the anatomy, development and morphology of plants. His view of plant history and its impact on the earth and other life has surely been shaped by that focus. What specific structures mediated that impact? Maybe you even disagree with his emphasis on structure and anatomy and think that other attributes of plants we studied were just as or more important. Review the book with a critical (in the scientific sense) eye, but also make an argument for how and why certain structures that lie at the heart of his narrative functioned to bring about the changes. Use the figures to call the reader's attention to the features you are talking about in the review. An extra careful paper would include a phylogeny as one of the figures, with the origins of the traits you discussed indicated on the tree.

We will finish reading the book on **November 21<sup>st</sup>**. All of the major groups of plants will have been introduced by mid-November, but remember, more than 90 % of land plants are flowering plants, or Angiosperms. So you might also want to think about why that should be so, as you write.

The final paper is due by 5pm on **Monday, December 5<sup>th</sup>**.

## The fine print

### Academic integrity:

Academic dishonesty of any sort will not be tolerated. Plagiarism includes the copying of phrases, portions of sentences or the main ideas from ANYONE (including a classmate) on ANY work submitted for a grade (exams, assignments, quizzes, etc). Academic dishonesty also includes assisting other students on quizzes or exams.

You are expected to abide by The University of Tennessee honor statement in Biology and in all of your university activities as pledged in the honor code:

***“An essential feature of the University of Tennessee, Knoxville, is a commitment to maintaining an atmosphere of intellectual integrity and academic honesty. As a student of the University, I pledge that I will neither knowingly give nor receive any inappropriate assistance in academic work, thus affirming my own personal commitment to honor and integrity.”***  
(2014-2015 Undergraduate Catalog)

Depending on the offence, penalties for academic dishonesty range from a minimum of a zero for the assignment, to an F for the course, to the filing of formal academic dishonesty charges seeking dismissal from The University of Tennessee. These choices are at the discretion of the instructor, and can occur in either the lecture or the lab portion of the class.

You should be familiar with the requisites of academic honesty and what constitutes academic dishonesty as outlined in the UT Undergraduate Catalog (<http://catalog.utk.edu/>).

### Other information

**Disability Services:** If you need course adaptations or accommodations because of a documented disability, please contact me privately to discuss your needs. If you have questions or concerns about disabilities or emergency information to share, please contact Disability Services: 2227 Dunford Hall; 974-6807; Email: [ods@utk.edu](mailto:ods@utk.edu); Website: <http://ods.utk.edu/>.

### **Academic Assistance:**

**Tutoring:** The Division of Biology does not offer tutoring services. Contact the Student Success Center and the Academic Support Unit of The Office of Minority Student Affairs for information about tutoring opportunities.

- **Student Success Center:** The comprehensive source for information, services, and resources to assist your success at UT: <http://studentsuccess.utk.edu>
  - 812 Volunteer Boulevard, Greve Hall, room 324
  - 865 974-6641, Email: [studentsuccess@utk.edu](mailto:studentsuccess@utk.edu)

### **Technical Assistance:**

Blackboard, clickers, or general information technology assistance:

- Help Desk: 865 974 9900 (M – F, 8:00 – 5:00)
- OIT Walk-In Help Desk: Commons, 2<sup>nd</sup> floor Hodges Library
- Turning Technologies (clickers): 866 746 3015

### **Counseling Center:** <http://counselingcenter.utk.edu/>

1800 Volunteer Boulevard

865 974-2196, Email: [counselingcenter@utk.edu](mailto:counselingcenter@utk.edu)

### **OTHER RESOURCES FOR STUDENTS:**

- One Stop: <http://onestop.utk.edu> (start here for any question you have)
- Undergraduate Catalogs: <http://catalog.utk.edu> (Listing of academic programs, courses, and policies)
- Hilltopics: <http://dos.utk.edu/hilltopics> (Campus and academic policies, procedures and standards of conduct)
- Course Timetable: [https://bannersb.utk.edu/kbanpr/bwckschd.p\\_disp\\_dyn\\_sched](https://bannersb.utk.edu/kbanpr/bwckschd.p_disp_dyn_sched) (Schedule of classes)
- Academic Planning: <http://www.utk.edu/advising> (Advising resources, course requirements, and major guides)
- Library: <http://www.lib.utk.edu> (Access to library resources, databases, course reserves, and services)
- Career Services: <http://career.utk.edu> (Career counseling and resources; HIRE-A-VOL job search system)