Biology 451, Fall 2014

Plant Evolution and Phylogeny

Textbook: Although technically not *required*, all reading assignments are made from the following textbook:

Bell, Peter R. and Alan R. Hemsley. 2000. *Green Plants: Their Origin and Diversity.* (2nd Edition) Cambridge University Press, New York. [ISBN 978-0-521-64763-4] (paperback)

Course Prerequisite: Biology 315 or equivalent course in biological evolution.

Examinations, Term Paper, Evidence of Learning, and Grading:

Six examinations are scheduled; two will be hourly midterm exams; the final exam will be two hours, and "hemi-cumulative". Three laboratory-based practical examinations are designed to test the student's ability to identify and interpret structures and relate them to concepts presented in lecture. Please note the following dates as those **required** for mid-term exams, practical exams, term paper, and other important course activities:

Date	Graded Activity	Percent of Grade	Grade	Grade-Pts
EXAMINATIONS: (80%)				
26 September	Midterm Exam 1	15	_____	_____
7 November	Midterm Exam 2	15	_____	_____
23 September	Practical Exam 1	10	_____	_____
4 November	Practical Exam 2	10	_____	_____
9 December	Practical Exam 3	10	_____	_____
17 December (tent.)	Final Exam	20	_____	_____
INDEPENDENT PROJECT: (20%)				
10 November*	Term Paper*	20	_____	_____
		TOTAL 100%		

A missed midterm exam **MAY** be prorated at the discretion of the instructor; under no circumstances will more than one hourly exam or practical exam be prorated; please make every effort to attend all exams and submit materials on the specified dates. Penalties for lateness will be assessed if warranted. Documentation from relevant authorities is required (i.e. medical excuse, note from dean, physician, etc.) to obtain credit for missed work, missed exams, or other problems.

***NOTE: Students must submit a term paper to pass the course.** The term paper is an individual, research-based report to develop the student's ability to conduct independent research and communicate in the biological disciplines. Specific instructions for this assignment are provided in a separate document.

Other Important Dates: 1 September - University Holiday - No Class
12 September - Term Paper Subjects Due
31 October – Last Day to drop class without extenuating circumstances
24 - 28 November - Fall Break - No Classes held.

Students With Disabilities Or Needing Accommodation: Please address any special needs or special accommodations with the instructor at the beginning of the semester or as soon as you become aware of your needs. Those seeking accommodations based on disabilities should obtain a Student Academic Accommodation Request (SAAR) form from the Disability Resources (DR) office (phone 515-294-7220). The Disability Resources office is located on the main floor of the Student Services Building, Room 1076. Please discuss specific accommodations with me at least 5 days prior to any exam or assignment deadline.

Student Attendance Policy And Absences: It is the student's responsibility to attend lectures in Biology 451/EEOB 551; attendance will not be taken. I do not need to be informed when you cannot attend class or laboratory. You will be responsible for obtaining information presented in lecture or making-up missed laboratory work. Given that all material covered on written and practical examinations will be presented in class and during laboratory sessions, it behooves the student to attend all class activities. (NOTE WELL: The instructor will not repeat lectures for individual students due to absences; laboratory materials are set-up each week for only a limited amount of time.) Illnesses or other medical conditions that result in the student missing an examination ***will need to be documented*** if the student wishes to make-up the examination at another time. Such cases of missed exams due to medical absences must be taken as soon as possible following their return to the University. The Dean of Students Office should be contacted in these cases (or in cases of personal or family emergency), so that all professors can be contacted "officially".

Schedule Conflict Policy: Should legitimate conflicts arise for scheduled examinations, the student should contact the instructor as soon as possible to set up an alternate time to take the examination(s), preferably BEFORE the scheduled examination date and time. Legitimate conflicts include: academically-related travel (i.e. interviews, attending conferences, taking entrance exams, etc.), scheduled or unscheduled medical absences that can be documented, and documented activities related to the student's participation in sporting activities while a member of a University sports team. Schedule conflicts created by employment are not considered acceptable excuses for missing scheduled examinations; the student's first responsibility is to their academic program.

Academic Dishonesty And Misconduct: Any form of academic misconduct or dishonesty will not be tolerated. Such behavior will be thoroughly documented and a report submitted to the appropriate offices for possible disciplinary action. It is assumed that all work submitted by a student (exams, written papers, reports, etc.) are done ***by the student*****;** any form of 'assistance' obtained during exams or misrepresentation of others' work will be treated as academic misconduct. This includes gathering information via the Internet and representing it, verbatim, as one's own work. The following definitions apply:

Academic Integrity (Taken from the Dean of Students Web site): The value of an education at Iowa State University depends greatly upon the quality of academic work and research completed by students at our institution. Each member of the Iowa State community has an opportunity to play an important role in promoting and preserving integrity on campus.

The academic work of all students must comply with all university policies on academic honesty. Examples of academic misconduct are:

- **Attempting to use unauthorized information in the taking of an exam**;
- **Submitting as one's own work, themes, reports, drawings, laboratory notes, computer programs or other products prepared by another person**;
- Knowingly **assisting another student in obtaining or using unauthorized materials**; or
- **Plagiarism**. A useful link to understanding plagiarism, the consequences of plagiarism, and best practices for avoiding plagiarism is available at: http://instr.iastate.libguides.com/content.php?pid=10314 .

Students may refer to: http://www.dso.iastate.edu/ja/academic/misconduct.html for additional information regarding academic misconduct. Additional information is also available on the Registrar's web site.

Biology 451, Fall 2014

Class Schedule

Lecture Date	Lecture Subject [Textbook Readings*]	Laboratory Subject (Tues. – 9:00 - 11:45 am)
M 25 August	Course Introduction and Scope, Assignments	**26 Aug** – Orientation; microscopes
W 27 August	Plant Structures and Tissues	Plant Structures and Tissues
F 29 August	Geological Time [5] – Phylogenetics -	Descriptive Terms
M 1 September	**University Holiday - No Classes**	**2 Sept** – Algae/*Coleochaete*
W 3 September	Overview: Algal groups; life cycles [13-16; Ch 3]	Charophytes
F 5 September	Charophytes, *Coleochaete*, transitional groups	Transition to land
M 8 September	Introduction to Bryophytes - GDLC [Ch.5]	**9 Sept** – Bryophytes I
W 10 September	Hepatophyta – Marchantiopsida [104-115]	Life cycle; Marchantiopsida
F 12 September	Anthocerotopsida [115-117] **[T.P. Subjects Due]**	Anthocerotopsida
M 15 September	Bryopsida [117-134]	**16 Sept** – Bryophytes II
W 17 September	Bryopsida (continued)	Bryopsida
F 19 September	Bryophyte Diversity and Phylogeny	Bryophyte DiversityBryophytr
M 22 September	Early Vascular Land Plants [Ch. 7]	**23 Sept – PRACTICAL EXAM 1**
W 24 September	Rhyniophytes [139] – Psilophytes [183-188]	
F 26 September	**EXAMINATION 1 – Algae and Bryophytes**	
M 29 September	Lycophytes – Introduction [Ch. 6]	**30 Sept** – Lycophytes I
W 1 October	Lycophytes (continued)	Early land plants: Rhyniophytes,
F 3 October	Lycophytes – homosporous: fossil vs. extant	Psilophyta, Homosporous Lycophytes Homo
M 6 October	Lycophytes – heterosporous groups	**7 Oct** – Lycophytes II
W 8 October	Equisetopsida – Life Cycle [Ch.6, p.162-171]	Heterosporous groups
F 10 October	Equisetopsida – Fossil Groups	Equisetopsida
M 13 October	Evolution of Vascular Systems	**14 Oct** - Equisetopsida
W 15 October	Extinct Pteridophytes	Paleobotanical survey
F 17 October	Pteridophytes [Ch. 7]	Plant Fossil techniques
M 20 October	Pteridophytes (continued)	**21 Oct** – Pteridophytes I
W 22 October	Pteridophytes (continued)	Life Cycle; Primitive Ferns
F 24 October	Pteridophytes (continued)	Vegetative Variation
M 27 October	Pteridophytes (continued)	**28 Oct** – Pteridophytes II
W 29 October	Phylogenetic Relationships in Pteridophytes	Derived Fern groups
F 31 October	Evolution of the Ovule	Homospory/Heterospory
M 3 November	Progymnosperms [Ch. 8; 218-226]	**4 Nov** – **PRACTICAL EXAM 2**
W 5 November	Gymnosperms [Ch. 8; 244-259]	
F 7 November	**EXAMINATION 2 – Seedless Vascular Plants**	Ginkgo
M 10 November	Gymnosperms (continued) **[TERM PAPER DUE]**	**11 Nov** – Gymnosperms: *Ginkgo*
W 12 November	Gymnosperms (continued)	Cycads, Pinopsida/confiers,
F 14 November	Phylogenetic Relationships in Gymnosperms	Gnetopsida

M 17 November Angiosperms [Ch. 9] **18 Nov** – Angiosperms I
W 19 November Angiosperms (continued) Life Cycle and Structures Life
F 21 November Angiosperms (continued) Vegetative Morphology

Week of 24 to 28 November - **Fall Break - No Class**es

M 1 December Angiosperms (continued) **2 Dec** – Angiosperms II
W 3 December Angiosperms (continued) Flower and Fruit Evolution Flower
F 6 December Phylogenetic Relationships in Angiosperms Trends in Angiosperm Evolution
Porphology

M 8 December Land Plant Phylogeny – Paper Discussion **9 Dec** – **PRACTICAL EXAM 3**
W 10 December Land Plant Phylogeny – Paper Discussion Laboratory Wrap-up
F 12 December Land Plant Phylogeny Review Review for Final Exam

Week of 15 to 1 December - FINAL EXAM WEEK - Exam scheduled for Wednesday, Dec. 17th, 9:45 - 11:45 am.

*Bell, P.R & A.R. Hemsley. 2000. *Green Plants: Their Origin and Diversity.* 2nd Edition. Cambridge U