

PLANT DIVERSITY
BIOL 2314, Fall 2013

Lecture: MWF 8:30-9:20 a.m., Fugitte 207

Lab: R 1:00-2:50 p.m., Fugitte 207

Instructor: Dr. Michael Bosela
Fugitte 205, Phone: 270-384-8192;
E-mail: boselam@lindsey.edu

Office Hours: MWF 1:30-3:30 p.m., T 8:00-11:00 a.m., and R 3:30-4:30 p.m.; or by appointment

Description (Course Catalog)

Study of plant characteristics and review of plant diversity. Students will learn Linnaean classification and use of dichotomous keys, comparative anatomy through dissection, and plant kingdom survey. Students will complete a taxonomic collection of specimens from a species list of representative Kentucky plants. Recommended for science majors only. Prerequisites: BIOL 1204 and BIOL 1214 with a minimum grade of C.

*This course prepares candidates for the Bachelor of Science in Biology Education degree with the knowledge base required in the Kentucky Core Academic Standards and the College Career Readiness Standards. The Conceptual Framework of the Education Program, "Teacher as Leader for the 21st Century", is incorporated. The Division of Natural and Behavioral Science works with the Education Program in preparing teacher candidates with the knowledge base required to meet Kentucky Teacher Standard I and the Education Program's Student Learning Outcome for Content Knowledge. Teacher candidates will be equipped to teach K-12 students and meet requirements for Unbridled Learning.

Textbook(s)

Reece JB et al. (2011) Campbell Biology, 9th Edition. Benjamin Cummings/Pearson Publishing, San Francisco, CA. ISBN: 9780321558273. 1263 pp.

Rushforth SR et al. (2008) A Photographic Atlas for the Botany Laboratory, 5th Edition. Morton Publishing, Englewood, CO. ISBN: 9780895827708 198 pp.

Yatskievych, K (2000). Field Guide to Indiana Wildflowers. Indiana University Press, Bloomington, IN. ISBN: 9780253214201. 392 pp.

* You will also be asked to purchase a hand lens (BelOMO 10x Triplet Loupe Magnifier with black nylon lanyard) for use in plant collection assignment. The loupe costs nearly \$40, but it is a tool that you will be able to put to good use for many years to come. Vendor information will be provided in class.

Course Overview

Most biology textbooks place a disproportionate emphasis on the animal kingdom. This course gives 'air time' to the other kingdoms of living organisms, focusing especially on those with the capacity for oxygen-evolving photosynthesis (cyanobacteria, algae, and plants). The course also introduces concepts and theories related to the origin of life and its subsequent diversification. Phylogenetics, the study of evolutionary relationships between organisms, is a major emphasis. Other lecture topics include population genetics, speciation and macroevolution, community biology and species interactions. Thus, by the end of the semester you should have a basic understanding how biological diversity is generated, how organisms are named and sorted into taxa, and how the organisms discussed in class interact with one another; and with animals, to create productive biological communities. You will also prepare an 'integrative learning' essay evaluating the implications of different models of natural selection on our interpretation of human behavior and morality.

The lab includes modules on plant identification and diversity. The diversity module (plant survey) is primarily observational, but also includes an experiment evaluating the effects of environmental variables (light quality and intensity, mineral nutrient types and levels, etc.) on the growth and development of fern gametophytes. In the plant identification module you will learn how to use taxonomic keys to identify plant species and will work together as groups to collect and identify plants from a variety of natural, and/or semi-natural, areas in and around campus (Department of Biology Natural Garden, Homeplace on the Green River Farm, etc.)

Lindsey Wilson College Essential Student Learning Outcomes

A Lindsey Wilson College Graduate will...

1. Communicate effectively
2. Employ effective skills of inquiry and analysis
3. Be a culturally aware, engaged citizen of the nation and world
4. Apply and integrate knowledge
5. Have gained depth of knowledge in a discipline

Biology Department Student Learning Outcomes

- 1.1 Mastery of the core course knowledge and content
- 2.1 Demonstration of basic laboratory skills and field techniques
- 3.1 Application of the scientific method
- 4.1 Communication in an acceptable scientific manner*

**** The Integrative Learning essays will be used to assess Learning Outcome 1.1 (above). For more information on this assignment and the assessment process (See pp. 4-5).***

Course Student Learning Objectives

Students who have successfully completed the course will be able to...

1. Demonstrate a mastery of the content as evidenced by their attainment of passing scores (>60%) on the course exams and lab practical. The integrative learning essays will also be used to assess the students' level of mastery of biological concepts in the area of inheritance, sexual reproduction, population genetics, gene expression, and natural selection.

2. Demonstrate basic laboratory and field techniques, including being able to....

Distinguish between plant taxa via the evaluation of their vegetative and reproductive traits, using the standard terminology of taxonomists

Compare and contrast between the diagnostic features of the most important plant families within Kentucky, such as the grasses (*Poaceae*), asters (*Asteraceae*), and legumes (*Fabaceae*).

Identify unknown plants using taxonomic keys, in both printed form (dichotomous keys) and online, as interactive, 'polyclave' keys. Students will also make their own keys!

Prepare herbarium sheets to document plant identifications. The herbarium sheets will contain good quality specimens, crisply pressed and showing multiple diagnostic traits, and they will be clearly label using a consistent labeling format.

Use compound microscopes for 'observation' and data collection. The students should know how to adjust the controls (iris diaphragm, light intensity dial, etc.) to improve the image quality and accord the y and also how to take measurements using the ocular micrometers. The students should also be able to prepare observational drawings.

3. Apply the scientific method in the context of performing fern gametophyte experiments. To ensure that the data collected is representative and unbiased, students will need to design their sampling protocols carefully. They will also need to figure out ways to quantify differences in growth rate and/or gametophyte morphology between the species and/or treatments groups being compared.

Grading

Grades will be assigned on a standard scale; A = 90-100% (990-1,100 points), B = 80-90%, with the following +/- categories; A- (90-93%), B+ (87-89%), B- (80-83%), and C+ (77-79%).

<u>Assignment/Task</u> ¹	<u>Points</u>	<u>Approx. Percentage</u>
Attendance - Lecture ²	45 (30 x 1.5 pts)	4 %
Attendance - Lab ²	35 (14 x 2.5 pts)	3 %

Weekly Quizzes ³	90 (6 x 15 pts)	8 %
Exams ³	400 (5 x 80 pts)	36 %
Fungi Reading and Quiz ⁴	30 (10 pts + 20 pts)	2.5 %
Class Discussions	75 (3 x 25 pts)	7 %
Population Genetics Worksheet	25 pts	2 %
Integrative Learning Paper	70 pts	6.5%
Hand Lens Purchase ⁵	20 pts	2 %
Plant Taxonomic Key (Lab)	30 pts	2.5 %
Synoptic Keys Reading Assignment	10 pts	1 %
Plant Families of KY Worksheet	20 pts	2 %
Plant Collection Assignment (Lab)	100 pts	9 %
Observational Drawings (Lab)	30 pts	2.5%
Fern Research Experiment (Lab)	60 pts	5 %
Practical (Lab)	50 pts	4.5%

TOTAL ~1,100 pts

¹ **All assignments, quizzes, and exams must be completed in order to pass the course.**

² Attendance points are only awarded for those labs or lectures which DO NOT include a quiz, exam, discussion, or practical.

³ Excluding the first week of the class and the three weeks with discussions (9/20, 11/15, 12/6), See 'Tentative Lecture Schedule', p. 7) quizzes or exams are scheduled for each week. All of the exams and most of the quizzes will be administered in class, on Fridays, but some of the quizzes may be delivered online (via Blackboard) to provide more timely feedback and leave more class time for content delivery. The exams and quizzes will be mixed in format and may include any or all of the following types of questions multiple choice, matching, labeling and drawing, true and false, fill in the blank, short answer, and essay questions. **Study guides will be prepared for the exams, but not for the quizzes.**

⁴ Since the fungus chapter (Chapter 31) falls at the transition between the survey component of the course and the final module on natural selection and evolution, it is not strongly integrated in the 'main fabric' of the course and has been dropped during semesters when the course ran into delays and time was short. Additionally, test scores have generally been distinctly lower for the fungus chapter than for any of the other chapters. To address these problems a flipped classroom design will be used in conjunction with the chapter this semester; meaning that the basic content will be delivered outside of class, via a directed reading assignment, and 'in class' time will be used for clarification, elaboration, and application, parts of the learning process that normally occur outside of class as homework. On top of this, students will be tested over the chapter on its own, as a stand-alone quiz, during the immediate succeeding class period.

⁵ To earn full points, you will need to purchase a hand lens by the end of the second full week of class (9/6/13). Half points (10 pts) will be allotted for students who purchase hand lens during the third week of the semester (9/8-9/13/13)

Attendance Policy

Regular attendance and positively impacts your grade via the allotment of attendance points. These points will be excused only for absences resulting from illness, medical emergency, or college-sanctioned extracurricular activities (choir, team athletics, etc.) provided that acceptable documentation, such as an e-mail from a coach or a doctor's note, has been provided. Students who are not able to arrange a doctor's visit can obtain documentation of their illness from the school nurse, Kay Gaines (Blue Raider Sports Medicine Center, Phillips Basement, 270-384-8238). Absences related to emotional stress (death or illness of a relative, spouse, or child; family or marital conflicts, etc.) are also excusable, but you will need to contact me to discuss your situation individually.

Class Discussions

We will have three discussions of controversial topics related to the subject area of the course; synthetic biology (the quest to create life, for a second time, in the lab); natural selection and human behavior; and epigenetics contribution to inheritance and biological evolution. Reading materials and 'preparation' sheets will be provided for each discussion one to two weeks ahead of time. The 'discussion preparation' sheets will help focus your attention on those portions of the readings that most relevant to our class. They will also prompt you to compare and contrast between the arguments of the different authors and will help you to start formulating your own opinions. To earn full points (25 pts per discussion), your preparation sheets must be completed ahead of time and you must contribute constructively to the discussions during the class period.

Plant Collection (Herbarium) Assignment

Working in groups of 3-4 students each, you will identify plants, 15 species in total, from field sites located on or near campus, such as the Department of Biology Natural Garden, Homeplace on the Green River Farm, Snake Creek, etc., with each group being assigned to a separate site. In general, whole plants will be collected, pressed and dried; however, species that are rare at the site (< 10 individual plants observed) will be documented either photographically using a digital camera or via the collection of small samples from a single plant. For each species evaluated field notes should be collected at the time of initial observation using a standardized data sheet provided with the assignment packet.

Although tentative identifications are possible in the field, these 'hunches' generally cannot be confirmed until after the specimens have been brought back to the lab room and examined in closer detail. In the lab you will have access to a library of plant identification books, including full floras for the state of Kentucky as well as for several adjoining states/regions. I will also provide you with the URLs for a subset of online plant identification websites (photo galleries, interactive keys, etc.) that I have found to be especially useful. Permission sheets for using the lab in the evenings and on the weekends will also be made available.

To prevent procrastination and provide you with feedback prior to the due date for the submission of your final plant collection I am asking each group to submit five plant specimens that have been identified to species before midterm break (10/10/13). Each species should be accompanied by a 'Plant Identification and Confirmation' sheet documenting how the plant was

identified and how this identification was confirmed. Your entire set of plant specimens and/or photos are due by 11/23/12, along with a typed inventory. Five to seven specimens will be selected for mounting and preparation as full herbarium sheets for each student group. Group grades will be assigned, but with the caveat that the grades may be adjusted by up to 20% (20 points out of 100) for individual students if significant differences in the degree of contribution of each student to the completion of the assignment are apparent based on my own observations and/or my discussions with each group during the course of the semester. Detailed instruction sheets for the project will be passed out in class as the semester progresses.

Fern Gametophyte Experiment

Working in groups of three to four students (as for the Plant Collection Assignment) you will perform an tissue culture experiment evaluating the effects of environmental variables; e.g., light quality and intensity, mineral nutrient levels, temperature, etc., on growth and development of fern gametophytes. Aside from developing 'basic' research competencies, this experiment will help you to understand the plant life cycle at a deeper level. The fern spores will be sterilized and sown on 10/10/12 and subsequently observed on a weekly to bi-weekly, basis for the next four to six weeks. You should collect both qualitative and quantitative data on the responses of the fern gametophytes to the experimental treatments and will also want take photographs to document your observations. In lieu of preparing lab reports, a culminating exercise that consists of a set of questions about the experiment; e.g., what morphological stages were apparent between spore germination and sexual maturity of the gametophytes, what treatment effects were observed, etc. will be employed. Written answers, supported by tables of data and photographs, are expected. In addition, the culminating exercise should be prepared individually not in groups. Thus each student will be assigned a unique grade.

Observational Drawings

For the plant survey labs (9/26-10/31) all of the lab handouts, excluding those for the fern gametophyte experiment, will include boxes for preparing colored drawings to record your observations. Your drawings should include scale bars (determined via the use of the ocular micrometers) and labeled per the instructions provided in the lab handouts. Some of you may have a degree of apprehension about being evaluated on your drawings but it is important to remember that this is NOT an art class and the goal is not necessarily for your drawings to be "true to life" or photographic since this would take too much of your time and also often fails to highlight key features of the specimens by capturing features that are unimportant diagnostically or repetitive and distracting. Your drawings can be highly stylized or abstracted as long as they capture your observations and show those features that are the most distinctive or unusual and thus of greatest utility for identification purposes. It is quite easy to distinguish between the work of students who took time to carefully examine and analyze the specimens before starting to draw, and those who just went through the motions. Your drawings, worth 30 points, will be turned in all at once, on the day of the lab practical. However, I will be sure to provide you with feedback as the survey component of the lab progresses to ensure that you know what I will be looking for when I am grading.

Integrative Learning Essay

For this essay assignment, you will read several chapters from the 'The Selfish Gene' by Richard Dawkins as well as selections from the book that is critical of Dawkins' gene-centered and reductionist view of evolution; 'Genes, Genesis, and God' by Holmes Rolston among other readings. Aside from their contrasting ideas about natural selection, Dawkins and Rolston differ widely in their styles of writing (argumentation) and in their religious beliefs, with Rolston being an ordained Presbyterian minister and Dawkins being a fervent atheist. You will be asked to compare the arguments of both authors as they relate to specific questions such as the level at which natural selection acts (gene, organism, or group) and whether the description of genes as 'selfish' is appropriate. You will be asked to indicate which views you find the most compelling and **biologically defensible** and also to evaluate the contention that humans are biologically 'programmed' for selfishness as asserted by Dawkins. Finally, you will critique the different styles of argumentation employed by both authors. The assignment involves integration both within and across academic disciplines; i.e., biology, communication, and religion.

Tentative Class Schedule

Week	Topic(s)	Textbook
1 (8/21-8/23)	Course Introduction, Taxonomy and Nomenclature	Chapter 26
2 (8/26-8/30)	Phylogenetics and Kingdom Overview Quiz #1	Chapter 26
3 (9/2-9/6)	Major Plant Families of Kentucky Quiz #2 No Classes, M 9/2 (Labor Day)	Handout
4 (9/9-9/13)	Origin and Diversification of Life Exam #1	Chapter 25.1-25.4
5 (9/16-9/20)	Abiogenesis Discussion #1	Chapter 25.1-25.4
6 (9/23-9/27)	Cyanobacteria, The Long Lost Cousin of Plants Quiz #3	Chapter 27 (partial)
7 (9/30-10/4)	Sexual Life Cycles, Protista Exam #2 (Origin of Life- Prokaryotes)	Chapters 13.2, 28
8 (10/7-10/13)	Plant Diversity – Part I: Seedless Plants Quiz #4	Chapter 29
9 (10/14-10/18)	FALL BREAK (No Class)	
10 (10/21-10/25)	Plant Diversity – Part II: Seed Plants Exam #3 (Protista-Seedless Plants)	Chapter 30
11 (10/28-11/1)	Plant Diversity – Part III: Flowering Plants Quiz #5	Chapters 30, 38.1
12 (11/4-11/8)	Microevolution, Population Genetics Exam #4 (Seed Plants)	Chapter 23
13 (11/11-11/15)	Population Genetics, Epigenetics Discussion #2 (Integrative Learning Essay)	Chapter 23
14 (11/18-11/22)	Macroevolution (Speciation) Quiz #6	Chapter 24
15 (11/25-11/29)	Macroevolution (Speciation) No Class on Friday (Thanksgiving)	Chapter 24
16 (12/2-12/6)	Mechanisms of Evolution Discussion #3 – Epigenetics Revolution	Chapter 25.5-25.6
17 (Finals)	Exam #5 (Genetics and Evolution) Monday 12/9/12, 8:00 a.m.-11:30 p.m.	

Tentative Lab Schedule

Date	Topic(s)	Lab Manual
8/22	Using Taxonomic Keys	Handouts
8/29	Evaluation of Plant Floral Traits	Chapter 9 (pp. 148-154) Handout
9/5	Family Keys and Pressing (or with Sedges)	Chapter 9 (pp. 168-175) Handouts
9/12	Herbarium Project – Overview and Instructions	Handouts
9/19	Grasses and Sedges Workshop	Chapter 4 (pp. 28-52) Chapter 3 (pp. 23-24)
9/26	Bryophytes	Chapter 6 (pp. 74-83)
10/3	Seedless Vascular Plants	Chapter 7 (pp. 84-101)
10/10	Set up Fern Gametophyte Experiment Plant Specimens Due – Plant Collection	Handout
10/17	Fall Break	
10/24	Seed Plants	Chapter 8 (pp. 103-118)
10/31	Flowering Plants	Chapter 9 (pp. 148-161)
11/7	Fungi – Lecture and Lab Combined	Chapter 5 (pp. 59-73) Textbook Chapter 31
11/14	Lab Practical Fern Gametophyte Experiment Work Day	
11/21	Plant Collection Project Work Day Specimens Due 11/22/13	
11/28	Thanksgiving, No Lab	
12/5	Open Lab, Lecture Catch Up	

LINDSEY WILSON COLLEGE
STATEMENTS FOR INCLUSION IN THE SYLLABUS
2013-2014

Academic Integrity

Academic integrity is essential to the existence of an academic community. Every student is responsible for fostering a culture of academic honesty, and for maintaining the integrity and academic reputation of Lindsey Wilson College. Maintaining a culture that supports learning and growth requires that each student make a commitment to the fundamental academic values: honesty, integrity, responsibility, trust, respect for self and others, fairness and justice.

To foster commitment to academic integrity, faculty are asked to require each student to place and sign the following Honor Code on tests, exams and other assignments as appropriate: **On my honor as a student, I have neither given nor received any unauthorized aid on this assignment/exam.**

Violations of the academic integrity policy include cheating, plagiarism or lying about academic matters. Plagiarism is defined as any use of another writer's words, concepts, or sequence of ideas without acknowledging that writer by the use of proper documentation. Not only the direct quotation of another writer's words, but also any paraphrase or summary of another writer's concepts or ideas without documentation is plagiarizing that writer's materials. Academic dishonesty is a profoundly serious offense because it involved an act of fraud that jeopardizes genuine efforts by faculty and students to teach and learn together. It is not tolerated at Lindsey Wilson College.

Students who are determined to have plagiarized an assignment or otherwise cheated in their academic work or examinations may expect an "F" for the activity in question or an "F" for the course, at the discretion of the instructor. All incidents of cheating or plagiarism are reported by the instructor to the Academic Affairs Office along with copies of all relevant materials. Each instance of cheating or plagiarism is counted separately. A student who cheats or plagiarizes in two assignments or tests during the same semester will be deemed guilty of two offenses. If the evidence is unclear, or if a second offense occurs, the VP for Academic Affairs or Associate Dean will work in cooperation with the Dean of Students to move the student before the campus Judicial Board for review. Violations will ordinarily result in disciplinary suspension or expulsion from the College, depending on the severity of the violation involved. **Note:** The College has purchased Turnitin.com, a web product used to detect plagiarized documents.

Questioning a Grade -- The Student Academic Complaint Policy

A student, who wishes to question **an assignment grade, or other academic issue**, should follow the procedure below:

1. Whenever possible, the student will first go to the faculty member who has assigned the disputed grade. Complaints regarding grades should be made within seven (7) days of receipt of the disputed grade and, if possible, will be decided by the faculty member within seven (7) days of receipt. If the disputed grade is the final grade for the course, "receipt" is defined by when the final grade is posted online by the registrar. (Please refer to the next section for appealing a final grade.)
2. Unless there are extenuating circumstances, the student may, within seven (7) days request in writing a review of such decision by the Chair of the division in which the grade was assigned. Upon receipt of such request, that Chair will direct the faculty member and the student to each submit, within seven (7) days, if possible, a written account of the incident, providing specific information as to the nature of the dispute.

3. Upon receipt of these written accounts, the Chair will meet, if possible, within seven (7) days with the faculty member and the student in an effort to resolve the dispute and will render his or her decision in writing.

4. If either the student or the faculty member desires to appeal the decision of the Division Chair, the student or faculty member may, within seven (7) days by written request to the chair, ask that the matter be reviewed by a Grade Appeals Panel convened by the Academic Affairs Office.

5. If the disputed grade is assigned at the end of a fall or spring semester and the student and faculty member cannot meet to resolve the issue, the student should contact the faculty member by e-mail within seven (7) days of receipt of the disputed grade. If the issue cannot be resolved by e-mail within the time limit, steps 2, 3 and 4 of the appeal may extend into the beginning of the semester immediately following receipt of the disputed grade by following the timeline above.

A student who wishes to question a **final grade** should follow the procedure below:

1. Confer with the faculty member who assigned the disputed grade.

2. If the disputed grade cannot be resolved, a written request for a grade appeal must be submitted to the Academic Affairs Office before the first day of the semester following the one in which the grade was issued. The written request must include the specific basis for the appeal.

3. The Academic Affairs Office will convene a Grade Appeals Panel, comprised of the Vice President for Academic Affairs, the Associate Academic Dean, and the chair of the academic unit which houses the course for which the grade is appealed. If one of the members is the faculty member who issued the grade, an alternate will be appointed. The student and the faculty member may appear separately before the panel to explain their positions. The hearing is non-adversarial. Neither the faculty member nor the student may be accompanied by other individuals to the meeting of the Grade Appeals Panel. The Grade Appeals Panel will notify the student of its decision, if possible, within seven (7) days of the meeting.

Policy for Verification of Student Identity and Protection of Privacy

In compliance with United States Federal Higher Education Opportunity Act (HEOA), Public Law 110-315, all credit-bearing courses and programs offered through distance learning methods must verify that the student who registers for a distance education course or program is the same student who participates in and completes the course or program and receives academic credit. One or more of the following methods must be used:

- a) A secure login and pass code;
- b) Proctored examinations; and/or
- c) Remote proctoring of one or more examinations using Tegrity or other technologies

Verification of student identity in distance learning must protect the privacy of student information. Personally identifiable information collected by the College may be used, at the discretion of the institution, as the basis for identity verification. For instance, a student requesting that their learning system password be reset may be asked to provide two or more pieces of information for comparison with data on file. It is a violation of College policy for a student to give his or her password to another student.

Detailed information on privacy may be located at:

<http://www.lindsey.edu/media/319883/Online%20Services%20Privacy%20Policy%204.20.12.pdf>

The Lindsey Wilson College Institutional Review Board (IRB) safeguards the rights and welfare of human participants in research and other research activities. Lindsey Wilson College faculty, staff, and students, which comprise its academic units, and facilities, are subject to the IRB policies. This includes any research for which a research agreement (e.g. MOU) identifies Lindsey Wilson College Institutional Review Board (IRB) as the IRB of record. All student-led human subject research must have a LWC faculty sponsor. All faculty members and students conducting human subject research are required to submit documentation of training on research involving human subjects that has been completed within two years of the onset of the proposed research. Online training is available at <http://php.nihtraining.com/users/login.php>.

Statement on Learning/Physical Disabilities

Lindsey Wilson College accepts students with learning disabilities and provides reasonable accommodation to help them be successful. Depending on the nature of the disability, some students may need to take a lighter course load and may need more than four years to graduate. Students needing accommodation should apply as early as possible, usually before May 15. Immediately after acceptance, students need to identify and document the nature of their disabilities. It is the responsibility of the student to provide to the College appropriate materials documenting the learning disability, usually a recent high school Individualized Education Program (IEP) and results from testing done by a psychologist, psychiatrist, or qualified, licensed person. The College does not provide assessment services for students who may be learning disabled. Although LWC provides limited personal counseling for all students, the College does not have structured programs available for students with emotional or behavioral disabilities. For more information, call Ben Martin at 270-384-7479.

Academic Success Center

The Academic Success Center, located in the Everett Building, offers peer tutoring to aid students in completing class assignments, preparing for exams and improving their understanding of content covered in a particular course. In addition, computers are available for student use.

Students are encouraged to utilize this Center as a resource for improving study strategies and reading techniques. The Center also offers assistance with other academic problems resulting from documented learning disabilities, provided that they have completed the application process outlined above under 'Statement on Learning/Physical Disabilities'. All services are free of charge, but students will be asked to show their student ID when signing up for tutoring services. Please contact Maretta Garner, Tutor Coordinator at 384-8037 for further information and assistance.

Writing Center and Mathematics Center

The Writing Center (located in the Slider Humanities & Fine Arts Building), and the Mathematics Center (located in the Fugitte Science Building) are available for specialized tutoring at no charge to students provided that they have valid Lindsey Wilson College Student ID cards. Please contact Jared Odd, Writing Center Coordinator, at 384-8209 or Linda Kessler, Math Tutor Coordinator, at 384-8115 for further information and assistance.

Final Exams

Final Exams for day classes are scheduled for the Fall 2013 semester on **December 9-13 and May 5-9** for the Spring 2014 semester. The academic calendar, which contains the schedule for finals, is in the College Catalog and course schedule listing. Please make any necessary flight arrangements **after** the final exam week. **Students will not be permitted to take early finals** unless extenuating circumstances exist. "Extenuating circumstance" means illness, a verified family emergency or participation in officially sponsored travel in support of an event arranged by the College. **Travel arrangements must be made in sufficient time** that tickets may be obtained after final exams and the semester is officially over. All requests for early finals must be made in person to the Academic Affairs Office.

Email Policy

All Lindsey Wilson College students are required to communicate with LWC faculty and staff via LWC (Lindsey.edu) email addresses only. Alternative email addresses should not be used when communicating with LWC faculty and staff.

Cell Phone Policy

Student cell phones will be off during class time unless prior arrangement is made with the instructor.

Adding/Dropping a Course

Students enrolled in the following courses cannot drop these classes during the semester: READ 0713, 0723, 0733, 0903, 1013 and 1023; STSK 1003; ENGL 0903 and 0904; and ESL 0803, 0804 and 0854.

For undergraduate classes at the Columbia campus, adding a course, dropping a course, or changing from one section of a course to another section of the same course requires the approval of the advisor and the instructor for each course involved as indicated on the Add/Drop Form. The change must be reported to the Business Office and the Registrar's Office on an Add/Drop Form, which may be obtained from the Registrar's Office. For AIM courses, adding a course, dropping a course, or changing from one section of a course to another section of the same course requires the approval of the Director of the Evening Program. For courses taught at Community sites, adding a course, dropping a course, or changing from one section of a course to another section of the same course requires the approval of the Site Coordinator for the campus. Permission to add courses will not be given after the last date for late registration. Authorization for dropping a course will not be approved after more than 75% of the instructional days for a course are completed, as outlined below:

Course	Deadline	Submitted by the Student to
Columbia undergraduate and graduate full semester courses	Not later than 30 days before the end of the semester	Registrar
AIM courses	By the sixth week of class	Registrar
Courses at Community Campuses	By the third weekend of class	Site Coordinator or the Registrar

If changes are not properly approved and officially reported as stated above, students will receive a grade of F in the courses for which they are officially registered, and they will be charged for all such courses. Students will not receive credit for changed or added courses unless they officially register for those courses.

PLANNING AND CUT OUTS:

Final Exam = M 12/9 – 8 a.m. to 10:30 a.m.

Quizzes outside of class prior to each Friday so I can give back and we discuss. Talk about just in time feedback

Indicate that they will have study guide for all of the exams. They will also have preparation sheets to prepare before each classroom discussion. The purpose of these sheets is to help them record the positions, arguments and data of the different authors, to summarize and compare across different authors, and to articulate their own feelings about the arguments and or speakers whose ideas will serve as the springboard for our own sharing.

⁴ The fungus chapter falls at the transition between the survey component of the course and the final module on natural selection and evolution. To focus your attention on those aspects of the readings that are deemed to be most important to the course you will be assigned sets of questions based on the readings, termed 'reading guides'. The reading guides, worth eight points each, should be completed prior to the start of each class period. I will check to make sure they have been completed, but will not grade them. It is your responsibility to make sure that you have clear and accurate answers to each question and, if not, to pursue this matter in class. Since the exams will be based in part on the readings guides it is in your best interest to take them seriously.

I may have to give one or more tests outside of regular class time. Ditto for quizzes, since it gets pretty tough.

Also I may have to replace Grass and Sedge with Algae

Give them a google map showing the locations of the group sites

Cut and Paste on Directed Reading Assignments from Plant Propagation - To focus your attention on those aspects of the readings that are deemed to be most important to the course you will be assigned sets of questions based on the readings, termed 'reading guides'. The reading guides, worth eight points each, should be completed prior to the start of each class period. I will check to make sure they have been completed, but will not grade them. It is your responsibility to make sure that you have clear and accurate answers to each question and, if not, to pursue this matter in class. Since the exams will be based in part on the readings guides it is in your best interest to take them seriously.

Magnifying glasses typically have low magnifying power: 2×–6×, with the lower-power types being much more common. At higher magnifications, the image quality of a simple magnifying glass becomes poor due to optical aberrations, particularly spherical aberration. When more magnification or a better image is required, other types of hand magnifier are typically used. A Coddington magnifier provides higher magnification with improved image quality. Even better images can be obtained with a multiple-lens magnifier, such as a Hastings triplet. High power magnifiers are sometimes mounted in a cylindrical or conical holder with no handle. This is called a loupe.

Such magnifiers can reach up to about 30×, and at these magnifications the aperture of the magnifier becomes very small and it must be placed very close to both the object and the eye. For more convenient use or for magnification beyond about 30×, one must instead use a microscope.

BelOMO hand lenses said to be of exceptional optical quality and also of good build quality. Can get 10x or 20x but the field of view only 7 mm for 20x vs. 17 mm for the 10x. Get on Amazon but from Amateur Geologist.

To participate in the class discussions you will need to prepare individual answers to a list of assigned thought questions before arriving at class. We will use the nine intellectual standards proposed by the Foundation for Critical Thinking (Tomaes, CA) to evaluate the arguments expressed by the authors of the assigned papers. [See ideas about discussions from the critical thinking workshop]