

**BIOLOGY 124****PLANTS AND HUMAN AFFAIRS FALL 2006**

Lecture: MF 8:00 – 9:30 339 Carnegie  
Lab: W 8:00 – 10:50 430-431 Carnegie

**Instructional Staff**

Dr. Robert Thomas [rthomas@bates.edu](mailto:rthomas@bates.edu) 423 Carnegie 786-6105 Office Hours: M,F 9:30 – 10:00  
Kathy Claerr [kclaerr@bates.edu](mailto:kclaerr@bates.edu) 512A Carnegie 786-6389 Office Hours: By appointment

**Text:** Plants and Society. Estelle Levetin and Karen McMahon. W. C. Brown, Boston. 2006.

Week #1 (Sep 8) Introduction; Photosynthesis; Chapters 1 (3-7), 3 (33-36 & 41-45), 4 (555-566) and 8

Week #2 (Sep 11, 15) Photosynthesis (continued); Origins of agriculture; Cereals; Underground food; Sugar; Chapters 1 (11-12), 11, 12, 4 (57-59) and 14 (see also Chapter 8)

Week # 3 (Sep 18, 22) Week #2 topics continued; begin week # 4 topics

Week # 4 (Sep 25, 29) Flowers; Fruit; Hormones Fermentation; Chapters 5, 6, and 24

Week # 5 (Oct 2, 6) Fibers; Forests & wood products; Transport; Chapters 3 (36-39), 4 (51-53); 18 and 26 (488-493, 487)

Week # 6 (Oct 9, 13, 16) Week #5 topics completed, exam review

**First Exam (Oct 16)**

Week # 7 (Oct 23, 27) Nitrogen and legumes; caffeine beverages; visit with a Doctor of Naturopathic Medicine; Chapters 1 (11-13), 13, 16

Week # 8 (Oct 30, Nov 3) Medicinals; Chapters 19, 20 and 21

Week # 9 (Nov 6, 10) Oils and terpenoids; Chapters 1 (12&15-17); 5 (84-85), 9 (151-152), 10 (164-167), 13 (219-220), 17 and 26 (485-487, 490-491)

Week # 10 (Nov 13, 17) Worldwide perspective; Chapters 10, 15 and 26

Week # 11 (Nov 27, Dec1) Week topic continues, Oral reports

Week # 12 (Dec 4, 6, 8) Reading week; Oral reports; Exam review

**Grading:** Midterm & Final Exams (25% each); a series of assignments leading to an essay that evaluates web sites dealing with an economically important plant species (20% -- species selected in consultation with an instructor); lab attendance and participation (10%); three write ups on the results of experimental work (5% each; one oral report on either one of the lab projects or essay topic (5%).

**Due dates for submission/presentation of assignments and exams:**

Sept 20 Plant choices	Oct 16 Mid-term exam	Nov 8 Essay due
Sept 27 1st lab report	Oct 25 Outlines returned	Nov 17 3rd lab report
Oct 4 Bibliography	Nov 1 2nd lab report	Dec 4-6 Oral reports
Oct 13 Outline		Dec 14 Final exam 8 AM

## Laboratory

Laboratory is scheduled for Wednesday from 8 to 10:50 AM. Unless notified otherwise, laboratories start promptly at 8 AM. Plan on being present for the entire period each week. Absences from lab require a Dean's excuse, otherwise points assigned for attendance and lab reports are forfeited. Laboratory exercises usually cannot be made up due to lab scheduling conflicts, the nature of group work in lab or the availability of live specimens. For labs that cannot be made up, the substitute activity will be a two page paper with 5 references (two from websites are accepted) on a prearranged topic. See Kathy Claerr after obtaining your Dean's excuse to make arrangements. Due to the use of toxic chemicals in laboratory, no food or beverages are allowed in lab. Smoking is not allowed in any areas of the Carnegie Science building.

Students with anticipated, excused absences (such as for team sports) are expected to make arrangements for make-ups well in advance of their absences. Team members are expected to provide to Kathy via email ([kclaerr@bates.edu](mailto:kclaerr@bates.edu)) with a list of the dates of their absences from lab.

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|---------|---------|---|
| # 1 --  | Sep 13  | Photosynthesis; Sugars, Starch and Cereals  |
| # 2 --  | Sep 20  | <b>Photosynthesis -Experiment 1</b> ; Fermentation and Fruit; <b>Plant Choices due</b>                        |
| # 3 --  | Sep 27  | <b>Field Trip</b> to Longfellow's Greenhouse, Manchester; <b>Experiment 1 write up due</b>                    |
| # 4 --  | Oct 4   | Secondary Growth, Transport; <b>Transport Experiment Conditions due, Bibliography and website choices due</b> |
| # 5 --  | Oct 11  | <b>Field Trip</b> to lumbering site, with a Maine State forester as guide                                     |
| Fri.    | Oct 13  | <b>Writing assignment outline due</b> in lecture  |
|         | Oct 18  | Break   |
| Mon.    | Oct 23  | Discuss with lab partners procedures for Transport Experiment.  |
| # 6 --  | Oct 25  | <b>Transport -Experiment 2</b> ; Legumes and Caffeine   |
| # 7 --  | Nov 1   | Dr. Julie Taylor, Naturopath; <b>Experiment 2 write up due</b>  |
| # 8 --  | Nov 8   | Medicinal Herbs and Terpenoids; <b>Essay due</b>  |
| # 9 --  | Nov 15  | Vegetable Oils and Soap; <b>Experiment 3</b>  |
| Fri.    | Nov 17  | <b>Experiment 3 write up due</b> in lecture   |
|         | Nov 22  | Thanksgiving break  |
| # 10 -- | Nov 29  | <b>Field Trip</b> to Willow Pond Organic Farm, Sabbatus   |
| # 11 -- | Dec 4-8 | Oral reports, lecture wrap up   |

### Required Attendance

**Students are required to attend the Writing Workshop presentation tentatively scheduled for the week of Sept. 13th.** Seri Rudolph, the College's scientific writing specialist, will present to the class information crucial to producing the three laboratory experiment write ups. These lab assignments emphasize graphing of data collected during student-designed laboratory investigations, and writing figure captions that are succinct, complete, stand-alone, as required in professional scientific literature.

## Field Trips

Three field trips are scheduled for this semester, and cannot be made up. The substitute activity will be a well-written, two page paper with a minimum of 5 references cited (two from websites are accepted; the course textbook does not count) on a prearranged topic, along with a Dean's excuse.

Students will meet vans for transportation at the Carnegie loading dock facing the Hathorn Quad. If

you are a certified student driver and are willing to drive a van, please contact Kathy Claerr (x6389), who will arrange for your hire for this paid position.

Dress appropriately for the field trips. Wear the proper clothing and footwear depending upon the terrain and weather conditions. Field trips include an outdoor component. Two will likely be spent entirely outdoors. Dress appropriately for the weather conditions. Bring a sweater, jacket, warm socks, waterproof boots, gloves and a hat that you can put on if needed. These articles of clothing can be left in the van if the weather is warmer than expected. If rain is forecast, a rain-repellent outer garment will be necessary.

### **Plagiarism**

Plagiarism is the use of someone else's work (OR ideas) without clearly showing that it was not your original work. Plagiarism on any assignments or lab exercise will not be tolerated. It is the responsibility of the student to read and understand the Bates College Code of Student Conduct (<http://www.bates.edu/x35306.xml>). If you do not understand what constitutes plagiarism, read the Bates website on plagiarism (<http://abacus.bates.edu/pubs/Plagiarism/plagiarism.html#0>), contact the Writing Workshop, or see your instructor. Students or groups who plagiarize will be referred to the appropriate dean for disciplinary action by the College, will receive no credit for the work in question, and may fail the course.

### **Academic Dishonesty**

Behavior other than plagiarism is also subject to disciplinary action by the college. Collaborative work is promoted in this course, however collaboration does not allow certain behaviors. Each student is expected to submit his or her own, original work for individual assignments. Students may not offer or submit their answers or work to or in the name of another student, nor may any student enter another student's name on answer or attendance sheets. If you are uncertain about the extent of allowable collaboration, speak to an instructor.

### **The Writing Assignment**

The writing component for this course consists of a series of assignments (in order of due date: Bibliography, Outline, and Essay) meant to build over the semester critical thinking and writing skills. Students are urged to read all section of this Writing Component section now in order to become aware the scope of the assignment. In particular, students should understand the requirements of the Essay section in order to write a suitable outline. **Note:** Assignments handed in after the due date will be penalized; all parts of the writing assignment must be handed to earn a grade for the full writing assignment.

#### **Choose three plant species**

**Due September 20**

To fulfill a requirement for this course, you research information about, and then write a short evaluative essay comparing internet sources of information on the uses of a plant species important to humans. The first step in this process is to choose an appropriate plant. You should choose a species with which you are not already familiar. Plants that are highlighted in the body of the course text book are NOT suitable choices. However, the text provides lists of plants that are useful AND are not high lighted in the body of the text. Your instructor may also hand out some lists of useful plants during lecture. These lists are not exhaustive. An appropriate species other than one on the list may be selected if you obtain the permission of an instructor. All choices will be reviewed.

If there is duplication in species chosen, we will draw lots to assign one plant species to each student. Therefore, you should select one plant as your favorite and another two as alternatives if we need to avoid overlap.

### **Bibliography**

**5% of class grade**

**Due October 4**

After you have determined the plant on which you will focus, create a bibliography of ten high quality internet web sites that deal with that plant species and its uses to humans. A bibliography is a collection of sources from which one could find information pertinent to a particular topic. Your bibliography should list full web addresses (URLs). These sources should answer questions such as:

- What is the scientific name of this plant? What are its common names?
- How do humans use this plant?
- Which parts of the plant are used?
- In what geographical area is this plant native?
- Is the plant cultivated currently? Where?
- When was the use of this material discovered? How was it discovered and who was responsible for its discovery?
- Has there been selective breeding done on this species to make it, for example, easier to cultivate, to make the plant produce more of the useful substance, to make it suitable for a different climate, or some other reason?
- What properties of the plant or the plant part make it useful for these purposes?
- How is the plant or the plant part prepared for use?
- What is the economic impact of this plant for the area of the world in which it is produced?
- Is the plant's usefulness being lessened by the manufacture of synthetic chemicals? That is, are humans trying or have they tried to make synthetic materials to replace the plant material? Has the effort been successful? Profitable?
- Are there any negative aspects, in terms of health, environmental degradation, etc., in growing, producing or using this plant's products?

### **Submission of the Bibliography**

Create your bibliography list as an MS Word document, that includes the full web address (URL) of each of the ten sites, beginning with **http://**, and the title of the page. Email this list to [kclaerr@bates.edu](mailto:kclaerr@bates.edu) by October 4, 2006. **Use the following as the subject line: "124biblio-studentname". The "124biblio" portion of the subject line must be identical to what is given here.** "Student name" should be your first initial and your last name, such as "kclaerr" or "K.Claerr". A correct subject line is, "124biblio-kclaerr."

For the next portion of the assignment, you will be selecting two or three web sites from your bibliography for comparison and evaluation.

### **Evaluating Internet Information**

The World Wide Web has become an incredibly rich information resource in just a matter of a few years. We go to the web to find information about the weather at our favorite ski venue in Colorado, to download music, purchase clothing, and even post our favorite pictures for anyone to see! You can find information on just about any topic you could think of.

Anyone can create and publish a web page, and herein lays the problem: how do you know that

what you are reading is “good” or factual information? This exercise will guide you in critically evaluating the web sites you found for your bibliography, and can be applied to sizing up any source of information, printed or on the web.

You will use a web resource that is published by Eric Brenner and Skyline College Library as a guide for how well your websites measure up. Go to <http://www.smccd.net/accounts/skylib/> and click on “**Evaluate Sources**” in the right hand column. Focus your attention on the selections listed at the top of this page entitled,

- **Evaluating Information from Web Pages**
- **Finding Information About Authors**
- **Questions for Evaluating and Annotating Any Source**

Skim the questions at the first two selections to get an idea of what kind of information you will be looking for in your selected web sites. Then go to your bibliography list and find two or three web sites that you will write about. Keep in mind that you will write an evaluation of these sites for this assignment.

Note that Bates College’s Ladd Library also offers a web site evaluation tool (and other links) at <http://www.cbbnet.org/teaching/evaluation.html> , however the Skyline College pages offer a more extensive question set.

When you have identified two of three web sites from your bibliography that you would like to evaluate in an essay, go back to the Skyline College Library or Ladd Library site, read and consider their questions in detail. Ask the questions listed in the sections noted above while viewing your bibliography web sites. (You do not have to perform or read the exercise directions given at the Skyline College site.) Investigate and make notes about these aspects as presented in your selected web sites.

When you have thoroughly assessed your two or three websites, go on to write an Outline (for the final essay) to be handed in for a review by your lab instructor.

## **Outline**

**5% of class grade**

**Due October 13**

Before submitting an essay for a grade, you are asked to organize your thoughts in outline form. We will look this Outline over with an eye to providing you with some helpful feedback. You are also encouraged to visit the Writing Workshop and/or an instructor for help and advice at any time.

The instructors will look for the following in your outline:

- Does the proposed introduction for the essay orient you to its subject and explain its significance?
- Does each section in the outline have a topic that can be reflected in topic sentences for paragraphs in the final essay?
- Does each section in the outline demonstrate a clear relationship with the previous one? Is the order of ideas logical and smooth? (They should be in the final essay).
- Do the proposed topic sections fulfill the promise of the introduction?
- Is research about the plant species included and placed in the larger context of other research? (Research must be clearly explained and correctly cited in the final essay).
- Have NEW, IMPORTANT or RELEVANT aspects about the plant species be included?
- What is the proposed title? Does the title sufficiently describe the content of the essay?

## Essay

10% of class grade

Essay due Nov. 8

Write an essay that critically evaluates two or three of the web sites that relate to your selected plant species. Use the notes that you made during your website evaluation to craft an excellently written, two to three page document. **A well written essay will have a clear thesis statement near the beginning of the paper, a single idea in each paragraph, and a topic sentence in each paragraph.** Of course, spelling, grammar and punctuation should be impeccable.

Write at a level appropriate for another classmate in Bio 124. In doing so, you can assume that your reader knows what you have learned in this class about plants, their structure and function, and ways in which people have exploited plants for human use. If there are terms that would be unfamiliar to you, you should explain those terms in your paper.

Seri Rudolph in the Writing workshop is available to help you with your writing process, from getting started to writing the final draft. Seri is a wonderful resource in helping students learn the writing process—you should take advantage of her expertise. Make an appointment by calling the Writing Workshop at 786-6159 well before the due date. Even if you decide not to take advantage of her services, nevertheless allow for sufficient time to critically read and make appropriate revisions to the first draft copy that you write. Check to make sure you have incorporated suggestions provided by your instructor on the graded outline. Look through the questions listed in the instructions for generating an outline, and make sure you have adequately addressed these questions in the final essay.