

Plants and Society: Economic and Cultural Botany

Bio 010

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Required text for lecture:

- *Plants and Society*, 4th ed. (2006), by E. Levetin and K. McMahon.
(abbreviated PS in syllabus)

Additional texts (readings posted on E-res):

- *Botany of Desire: A plant's eye view of the world*. (2001), by M. Pollan. (abbreviated BOD in syllabus)
- *Napoleon's Buttons: 17 molecules that changed history*. (2003), by P. Le Couteur and J. Burreson. (abbreviated NB in syllabus)
- *Guns, Germs, and Steel- The fates of human societies*. (1999), by J. Diamond. (abbreviated GGS in syllabus)

Course description:

This is a non-majors course designed to introduce students to the diverse ways in which humans interact with plants. Such interactions have played, and continue to play, a fundamental role in shaping the world in which we live. Topics covered will include the origins of agriculture, the manipulation of plants by people, plant-secondary chemicals as a source of spices, medicines, and psychoactive drugs, and the genetic engineering of plants by people. These topics will require a general understanding of genetics, ecology and evolution. Because of the multidisciplinary nature of the field, you will be introduced to aspects of botany, chemistry, anthropology, and archeology, as well as other disciplines.

Course goals and philosophy:

In this course we will work together to achieve the following goals:

- To recognize and draw connections between botany, general biology, and the broader liberal arts curriculum
- To understand the range of interactions between people and plants, as well as how both people and plants have changed one another profoundly
- To explain the origin of agriculture and how it impacts human cultures, past and present
- To understand how natural and artificial selection cause evolutionary changes in plants (dispersal, defense, mating systems)

We will maximize the number of people who achieve these goals by working together to create a supportive learning environment. You are ultimately responsible for the quality of your educational experience. Please keep this in mind over the course of the semester. I will introduce you some of the fundamental concepts in the field, along with a clear rationale for *why* they are

important. It is your responsibility to learn the material. I expect that you will all take an *active* role in the learning process. Asking questions is a key element of learning!

Course structure:

Issues consists of both a lecture and laboratory component, *the lecture will contribute 70% to your overall grade and the lab will contribute 30%*. Because lectures will expand on concepts from the textbook, you should *read all assignments before attending class* so that you are familiar with the material. You will be expected to participate in class discussions and to collaborate in small groups during the lecture and laboratory periods.

Assignments:

Exam #1 (2/20)	100
Exam #2 (3/27)	100
Final exam (5/4)	100
Research paper*	150
People & Plants in the news	20
Biotechnology debate	20
Research paper presentation	50
<u>Misc. assignments and participation</u>	<u>25</u>
TOTAL	565

Turnitin.com

Assignments with an asterisk will only be graded after submission to www.turnitin.com, a website that is used in order to prevent plagiarism. Students will need a class ID and password to access the website. More detailed information on how to use this website will be given before the first assignment is due. A hard copy of **ALL** assignments must be turned in at the beginning of the class period when they are due.

Grading scale-

A: 93-100%	B-: 80-82.9%	D+: 67-69.9%
A-: 90-92.9%	C+: 77-79.9%	D: 63-66.9%
B+: 87-89.9%	C: 73-76.9%	D-: 60-62.9%
B: 83-86.9%	C-: 70-72.9%	F: <60%

Attendance:

Reading the textbook CANNOT substitute for attending class. Class attendance is a crucial aspect of your educational experience. I will keep track of attendance. More than two weeks of unexcused absences from the class (6 lectures) can result in failure in the course.

Make-up examinations:

Make-up lecture exams will be given only if prior notification is given and if a letter from the Dean of Students is obtained. Anyone who fails to comply with these procedures will receive a zero for missed exams.

Late assignments:

All assignments will be collected at the *beginning* of class on the due date (unless otherwise noted on the syllabus). Late assignments will be downgraded by 10% for each day late unless prior arrangements have been made.

Special considerations:

If you require special assistance or consideration to accommodate a condition that may affect your performance in this course, please inform me of your need at the beginning of the semester or at the time you become aware of your need for assistance. From that point forward, any reasonable and necessary accommodations will be implemented.

Policy on Academic Dishonesty

A general description of the university policy on academic dishonesty can be found in the Student Handbook or at www.susqu.edu/campus_center/handbook/academic_honesty.pdf. I adhere to the University policy and therefore you should be familiar with it. Read the definition of plagiarism carefully and make sure that you fully understand its meaning. (Note: It would be *fair game for me to give a quiz on this information.*) **Sharing** your work with others is just as serious an offense as **copying** work from others. Every instance of academic dishonesty will be dealt with and reported as outlined in the handbook. When in doubt as to whether something is considered plagiarism, please come discuss your concerns with me before handing in your work. Note that I reserve the right to have all written assignments submitted in an electronic format so that I can check assignments for plagiarism against internet sources.

Below is a tentative schedule that is subject to change as the semester progresses. Attending every lecture is the best way to stay informed of changes to the syllabus. You are responsible for finding out about any information that you may have missed due to an absence.

Date	Topic	Readings	Assignment due
1/16 M	Introduction to the course & Overview of relationships between people and plants	PS Ch. 1: pp. 2-8	
1/18 W	The nature of science & how popular media conveys scientific info	Critically evaluating scientific claims in the popular press (Ford) & Ethnobotany and the liberal arts (Anderson)	Evaluation of article's primary claim and MoLOR critique
1/20 F	Plant structure and function	PS Ch. 2: pp. 20-27, Ch. 3	
1/23 M	Plant structure and function	PS Ch. 4: pp. 50-55 & 60-65	
1/25 W	Basic overview of genetics	PS Ch. 7	Student presentation 1*
1/27 F	Natural selection, evolution, and plant diversity	PS Ch. 8	Student presentation 2*
1/30 M	Artificial selection and human manipulation of plants	Unconscious selection and the evolution of domesticated plants (Zohary)	Student presentation 3*
2/1 W	Human nutrition	PS Ch. 10	
2/3 F	Origins of agriculture	PS Ch. 11 & GGS, Ch. 5 & 6	Student presentation 4*
2/6 M	Cereal grains and forage grasses	PS Ch. 12	Student presentation 5*
2/8 W	Legumes	PS Ch. 13	Student presentation 6*
2/10 F	Starchy staples	PS Ch. 14 & The leaf that launched a thousand ships (Daly)	Student presentation 7*
2/13 M	Fruits and nuts	PS Ch. 6: pp. 93-103 & NB Ch. 14 Oleic acid	Student presentation 8*
2/15 W	Fruits and nuts	Engineering the apple (Hubbell)	Student presentation 9*
2/17 F	Feeding a hungry world	Ch. 15	
2/20 M	EXAM 1		

2/22 W	Mechanisms of plant defense	PS Ch. 1: pp. 15-17	Student presentation 10*
2/24 F	Stimulating beverages	PS Ch. 16	
2/27 M	Stimulating beverages	Prescription-strength chocolate (Marino) & Chocolate: healing 'food of the Gods'? (Lee & Balick)	
3/1 W	Herbs and spices	PS Ch. 17 & NB Ch. 1 Peppers, nutmeg, and cloves	
3/3 F	Herbs and spices	Protecting ourselves from food (Sherman & Flaxman)	Student presentation 11*
3/6 M	NO CLASS		
3/8 W	NO CLASS		
3/10 F	NO CLASS		
3/13 M	The Shaman's Apprentice	Will tribal knowledge survive the millennium (Cox)	DUE questions on film
3/15 W	Medicinal plants	PS Ch. 19 & The Chimpanzee's Medicine Chest (Sears)	Student presentation 12* DUE annotated bibliography for research paper
3/17 F	Medicinal plants	NB Ch. 11 The pill & Ch. 17 Molecules v. malaria	Student presentation 13*
3/20 M	Brain chemistry and function		Student presentation 14*
3/22 W	Psychoactive plants	PS Ch. 20	Student presentation 15*
3/24 F	Psychoactive plants	BOD Ch. 3 Marijuana	Student presentation 16*
3/27 M	EXAM 2		
3/29 W	Psychoactive plants	NB Ch. 12 Molecules of witchcraft	Student presentation 17*
3/31 F	Peer Review		DUE first draft of research paper

4/3 M	Fermentation of alcoholic beverages	PS Ch. 24	Student presentation 18*
4/5 W	Fermentation of alcoholic beverages	Drunken monkey hypothesis (Stephens & Dudley)	Student presentation 20*
4/7 F	Cloth, paper and wood	PS Ch. 18	Student presentation 21*
4/10 M	Introduction to genetic modification of plants		Student presentation 22*
4/12 W	Movie on genetically modified foods		DUE final draft of research
4/14 F	NO CLASS		
4/17 M	NO CLASS		
4/19 W	Patenting genetic material		Student presentation 23*
4/21 F	Debate preparation		Student presentation 24*
4/24 M	GMO debate		
4/26 W	Student presentations		
4/28 F	Student presentations		
5/1 M	Student presentations		
5/2 F schedule	Student presentations		

Selected Course Readings
(provided to demonstrate reference format)

Cox, P.A. 2000. Will tribal knowledge survive the millennium? *Science*, 287 (5440): 44-45.
(accessed at <http://www.sciencemag.org/cgi/content/full/287/5450/44>)

Daly, D.C. 1996. The leaf that launched a thousand ships: Ireland's potato famine. *Natural History*, 105 (1): 24-32.

Diamond, J. 1999. *Guns, germs, and steel- The fates of human societies*. New York: W.W. Norton & Company.

Hubbell, Sue. 2001. Engineering the apple. *Natural History*, 110 (8): 44-52

Lee, R. and Balick, M.J. 2001. Chocolate: Healing 'food of the gods'? *Alternative Therapies*, 7 (5): 120-122.

Marino, J. Prescription-strength chocolate. *Science News*, 2/10/2004. (accessed at www.chocolate.org/health/chocprescribe.html).

- Sears, C. 1990. The Chimpanzee's Medicine Chest. *New Scientist*, 127 (1728): 42-44.
- Sherman, P.W. and Flaxman, S.M. 2001. Protecting ourselves from our food. *American Scientist*, 89 (2): 142-151.
- Sokolov, R. 1993. The unknown bioengineers. *Natural History*, 102 (10): 104-108.
- Stephens, D and Dudley, R. 2004. The Drunken Monkey Hypothesis: the study of fruit-eating animals could lead to an evolutionary understanding of human alcohol abuse. *Natural History*, 113(10): 40-44.
- Zohary, D. 2004. Unconscious selection and the evolution of domesticated plants. *Economic Botany*, 58 (1): 5-10.