

# *Plants, People and Food Production BIOL-10600*

*Spring 2009 ♦ 3 Credits (LA/NS 2a) ♦ CNS 112 ♦ 10:50-12:05*

## **Instructor**

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## **Web Links**

Professor Melcher's Homepage: <http://www.ithaca.edu/hs/depts/biology/facstaff/pmelcher/>

Blackboard: <http://webct.ithaca.edu/>

## **Course Description**

Learning about plants is the central topic of this course. Plants provide humanity with all of our foods, either directly, or indirectly. Thus, you will learn how different types of plants grow and function (physiologically). To achieve this learning goal, you will learn some basic chemistry, plant anatomy, general physiology, energy and metabolism, the plant life cycle, and how the environment affects plant growth.

Human population levels are currently at 6.5 Billion people. Projections indicate that these numbers will climb to an estimated 10 Billion people in the year 2050. It is believed that this dramatic increase in population will tax our planets ability to sustain life as we know it. Issues related to global and environmental sustainability, as well as, food production will be themes also discussed in this course. Thus, you will learn the basics of demography, agricultural food production (the major crops grown around the world) and a little about the various types of agriculture (sustainable agriculture, organic farming, traditional farming, and the use of plant biotechnology and genetic engineering in agriculture). At the end of the course we will briefly discuss the role of plants in human nutrition, medicine and psychoactive drugs. We will then cover the Fungi, even though they are not plants, they are really vital to our survival so you will learn a little about several really cool and important fungi. Lastly, we will discuss plant ecology.

## **Required Text**

**Plants and Society, 5th Edition**, Estelle Levetin and Karen McMahon, McGraw-Hill, ISBN-13 9780077221256

## **Expected Learning Outcomes**

- Learn basic plant anatomy, physiology and how the environment affects plant growth
- Demography and the impact of Human populations on the environment
- Basic concepts of sustainability
- The major types of crops grown around the world, factors that influence crop productivity and yield, and the role of plants in human nutrition and drugs
- Differences between sustainable agriculture, organic farming, traditional Western farming and the use of plant biotechnology and genetic engineering in agriculture

## Methods of Assessing Expected Learning Outcomes (performance evaluation)

Four in class exams and random quizzes will be given to test your comprehension of lecture and course readings materials.

**Grading :** Your grade for the course will be based on the following:

	<b>Points</b>	<b>% of final grade</b>
Quizzes	50	20
Exam 1	50	20
Exam 2	50	20
Exam 3	50	20
Exam 4	50	20
<b>Total</b>	<b>250</b>	<b>100</b>

### Academic Honesty:

All the work in this class must be your own, unless stated otherwise. Confirmed instances of academic misconduct will result in a zero grade for that test or assignment and referral to the school judiciary system. Please refer to the Student Handbook for a detailed description of the policies regarding student academic conduct.

### Attendance:

You are expected to attend all scheduled lectures (see page 269 Undergraduate catalog). There is a strong correlation between exam performance and lecture attendance. Therefore, you should make every effort to attend lectures. **Exam attendance is mandatory.** An examination missed during an unexcused absence will result in a failing grade for that exam. To be excused from taking an exam during the scheduled time, you must make a request in advance, **at least 1 week before the exam date.** Make up exams may also be taken if you miss an exam for the following reasons 1) Illness (however, you must contact me **before** the exam begins by phone, email alone is insufficient; you need to **call and leave a message** with a number where I can contact you (if I am not available). Failure to do so will result in a zero for that exam); 2) appearance in court (need to show proof of court date); 4) religious observance, please talk to me during the first 2 weeks of class, family emergencies, however, I will expect proof of such emergencies this can be discussed on an individual basis.

If you participate in athletic, musical, or other college-sponsored activities, and you are required to be off campus during scheduled class time, you must make arrangements for these absences with me **at the beginning of the semester**. If you have questions, please read and observe general college policy regarding attendance in the Ithaca College Undergraduate Catalog.

### Accommodations

In compliance with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act, reasonable accommodation will be provided to students with documented disabilities on a case by case basis. Students must register with the Office of Academic Support Services and provide appropriate documentation to the college before any academic adjustment will be provided.

### Plagiarism

Plagiarism is a serious crime and is not tolerated by the federal government, Ithaca College and myself. If you are not sure how to incorporate other people's ideas in your writing please see me. Bring the work that you would like to reference or site and I will help you to use it properly. Please see rules and consequences in the Ithaca College Undergraduate Catalog.

## Other Rules

As a courtesy to me and to your peers, you must turn all electronic devices off during lectures and exams. Devices such as iPods, M3 players must be off. You must also switch your cell phones off or on silent mode (not vibrate mode this mode is too noisy). Head phones are not allowed to be used in class and during exams. All recording devices such as tape recorders, laptops, cell phones etc. cannot be used during exams. **Extra credit will NOT be given**

**Tips:** You should read chapters before scheduled lectures and study often. Exams will draw from the material covered in lecture and the course text book. Working in small groups may really help. Please visit me during my office hours, I have reserved this time for you.

## COURSE OUTLINE

Date	Day	Topic	Chapters (page #)
1-20	T	Course overview expectations and grading Fundamental Properties of Life Basic chemistry that is important for this course (atoms and macromolecules)	1
1-22	R	The Plant Cell and Cellular components Cell wall and some key organelles	2 (20-26)
1-27	T	The Plant Body (Tissue systems and Organs)	3 (32-39)
1-29	R	Metabolism, Energy and Enzymes	4 (54-58)
2-3	T	Photosynthesis	4 (58-64)
2-5	R	Respiration	4 (62-69)
2-10	T	<b>Exam 1</b>	
2-12	R	The Plant Life Cycle: pollination and the role of flowers	5 (72-77 and 83-86)
2-17	T	Plants in action (video)	
2-19	R	Human Nutrition	10
2-24	T	Origins of Agriculture	11
2-26	R	Major food crops of the World (The grasses)	12
3-3	T	Major food crops of the World (Beans and Starchy Staple)	13 and 14
3-5	R	<b>Exam 2</b>	
3-10	T	<i>SPRING BREAK</i>	--
3-12	R	<i>SPRING BREAK</i>	--
3-17	T	Global Population (Human demography)	notes
3-19	R	Video: Nova – Global Populations	notes

3-24	T	Agricultural impacts on global ecosystems	notes
3-26	R	History of Agriculture Video	15 (235-241)
3-30	T	genetically modified crops	15 (241-261)
4-2	R	Traditional, Organic, Sustainable (long distance versus Local farming	notes
4-7	T	Impacts of Corn on American health	notes
4-9	R	<b>Exam 3</b>	
4-14	T	Materials, Cloth, Wood and Paper	18
4-16	R	Caffeine : Coffee, Tea, chocolate and cola	16
4-21	T	Medicinal Plants	19
4-23	R	Psychoactive Plants	20
4-28	T	The Fungi The role of Fungi in beverages & foods	23 (402-404; 415-427) 24 (428-435)
4-30	R	The role of Fungi in beverages & foods Fungi and Health	24 (435-447) 25
5-4	T	Plant Ecology	26 (465-476)
5-11	M	<b>EXAM 4 4:30-7:00 pm CNS 112</b>	