

Syllabus

Horticulture and Crop Science 200

The Science of Growing Plants

Instructor: Various (McMahon, Barker, Jourdan, Harrison, etc) **Office:** (by instructor)
Phone: (by instructor) **Hours:** by appointment
Email: (by instructor)

Teaching Assistants: Varies by quarter

Course Description: Study of environmental, genetic, and cultural factors that influence the cultivation of plants for food, fiber, ornamental and landscape uses.

Reference: (recommended) Hartmann's Plant Science
McMahon, Kofranek, and Rubatzky
Prentice-Hall

Class Materials: Extensive resources are available through the Carmen (previously WebCT) Website for this course, including lecture outlines, collection of relevant images, on-line quizzes, on-line forums, mail options, and grading reports

Purpose: This class gives students interested in the cultivation and care of plants for food, fiber, ornamental, and recreational use (i.e., crops) the basic understanding of how environmental, cultural, and genetic factors influence plant productivity. Students are introduced to the ecological foundations needed for the development of integrated production systems to improve cultivated plant productivity. Students are encouraged through interactive discussions and hands-on activities to develop skills needed to make informed decisions about the growing, production, and utilization of plants and crops. In addition, students develop an appreciation for the contribution that cultivated plants make to the environment and humanity

Goals:

Upon successful completion of H&CS 200 a student will:

- ✓ Have a basic understanding of how plants grow.
- ✓ Recognize the role environment plays in plant growth and crop production or utilization.
- ✓ Understand the social and economic factors that also influence the cultivation and utilization of plants.
- ✓ Be able to apply what was learned in class to grow and maintain plants commercially or for personal satisfaction.
- ✓ Have a firm foundation for future classes in Horticulture and Crop Science and related areas.

Topics: The time is an estimation, topics may start or end the previous or next week.

Week	Topic	Experiential Activity
1	Introduction and overview	Start Plant Diary
2	Ecology: Major biomes of the world, ecological terms and principles, temperate deciduous forest	The Ecological Paradigm. Discussion: Generating new knowledge through research.
	Ecological Research: How do we know what is happening in our environment? Gathering historical and geographical data, controlled experiments, understanding complex systems, interpreting information.	
3	Human footprint: Individual needs for food, fiber, energy, recreation and aesthetics; how these shape our environment.	Comparing ecological footprints - Website
4	Climatic factors: Light, water, atmospheric composition and movement: natural processes and their modification in crop production MIDTERM EXAM	Analysis of weather data. Estimation of degree-days. Tour of the greenhouse.
5	Soils: Role of plants and other organisms in soil formation, management of soil structure, composition and function in crop	Contrasting soil and artificial media
6	Plant Diversity: The origins of crop plants, exploitation and conservation of genetic diversity	The plants in the products we consume. Taste test between organic and non-organic crops.
7	Carbon & Energy flow: Photosynthesis at plant, crop and community levels. Trophic levels and food webs. Energy input and recovery	Discussion: carbon accumulation and climate change. Current literature/news.
8	Nutrients: How mineral nutrients move through plants, other organisms and the environment.	Demonstration of fertilizers, nutrients and calculation of nutrient content in fertilizer.
9	Plant populations and resources: How weeds and crop plants compete for resources, short and long term.	Pesticide labels
	Pests and diseases: Organisms that attack plants and how they can be controlled	
10	Crop Ecosystems: Ways of combining and managing cropping systems and effects on people and the environment.	GMOs, the future of agricultural inputs. News articles. Economics.
	Social issues in crop production and utilization of resources	

Evaluation:

Criteria	Percent
Midterm	20
Second Midterm or On-line quizzes	20
Final Exam	25
Homework	15
Activity Reports	15
Self evaluation (effort put forth in class)	5

Grading:

A	93-100	Students are graded individually and overall grades are not based on a bell curve (everyone can get an A). In other words, you are not competing among yourselves for grades. This method of grading encourages learning and cooperation among students
A-	90-92	
B+	88-89	
B	82-87	
B-	80-81	
C+	78-79	
C	72-77	
C-	70-71	
D+	68-69	
D	60-66	
E	<60	

Self Evaluation:

Each student is required to write a self-assessment of the effort he or she gave to the class. You can think of this as a warm-up exercise to the annual reports you will most likely have to write for your employer. The assessment is a comparison of the effort you know you should have put forth to that which you actually put forth. I realize that you have lives outside the classroom and you have to allocate your time and effort among many different components of your lives. I am not expecting you to tell me you devoted your entire life to the class (if you did, I'd be very concerned about you!). I am expecting you to tell me how much of what you should have devoted you actually did. From that comparison you will assign yourself a numeric grade for effort such as 100%, 97%, 90%, or, if you totally blew off the class something like 55%. The rest of the report will justify your 'grade' and will consist of a description of the kinds of effort you put forth (e.g. attendance, lab participation, contributing to discussions, test performance, etc.) and what you accomplished as a result of that effort.

Attendance:

Students are strongly encouraged to attend regularly. A significant portion of the information presented in the class is not in the textbook or lecture outlines . Students who fail to attend class run the risk of missing that information. The information will be included in the examinations.

Class participation:

Although the instructor and TA's assume responsibility for most of the instruction in this class, each student in this class brings relevant personal experience (life or classroom) to the subject matter. Students are asked to share with the class these experiences if they feel comfortable in doing so. There is a very wide range of interest and stage of academic development among the students in this class. Therefore, students who are further along in the H&CS majors are encouraged to provide assistance to those students less advanced in the majors or from non-H&CS majors.

Students with Disabilities

Students with chronic disabilities are encouraged to inform the instructor at the beginning of the term. The instructor and student will work then with the Office of Disability Services to provide appropriate accommodations. No special accommodations will be made for students who do not inform the instructor in a timely fashion or who do not involve the Office of Disability Services. Temporary disabilities will be accommodated as needed.

Code of Conduct:

In H&CS 200, courtesy and respect for others will given by all participants, including instructors, teaching assistants and guests, in the class at all times. An environment that fosters free, non-confrontational expression of ideas will be maintained. When working on teams, each team member will assume full responsibility for their role as a member of that team. Academic misconduct such as plagiarism, cheating, and other dishonest practices will not be tolerated. Any instances of student misconduct or suspected academic misconduct will be handled according to policies of the Code of Student Conduct in the Student Handbook or Faculty Rule 3335-5-487.

H&CS 200 – Course Change Request

Supporting information for H&CS 200

Below: Example of a website page that provides supporting information for h&cs 200.

Students can choose to view and listen to an interactive presentation (AUDIO-VISUAL link) or read a text/graphics page of the same content. In addition they can find out additional information about the topic through the 'Tell Me More' link.

Hundred such pages are available for student use in the course.

Home > Lectures

crop science

- 1. Introduction
- 2. Ecology
- 3. Research
- 4. Human footprint
- 5. Climate
- 6. Soils
- 7. Diversity
- 8. Carbon flow
- 9. Nutrients
- 10. Populations
- 11. Pests
- 12. Ecosystem
- 13. Society

Save

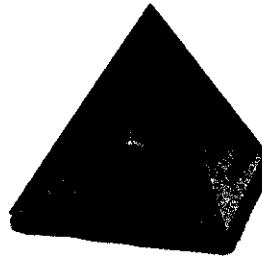
Go To

1 The Science of Growing Plants



This course takes an ecological view of people and their crops. Although it addresses global issues, the examples and applications are mainly focused on the northeastern US. For institutional reasons forestry is not included in this course. The science in this course aims to provide an understanding of how people draw on genetic and physical resources to produce their food and develop their environment.

- ▶ For the purpose of this course a crop is any plant that is grown to be eaten or for ornamental purposes.
- ▶ People have modified, manipulated or even constructed the ecosystems that cover much of the earth's surface.
- ▶ Crop production is influenced by social factors and organic and physical resources. Crop ecology and human ecology are intertwined.



AUDIO-VISUAL
text and graphics



H&CS 200 – Course Change Request

Below: Example of a WebCT home page for hcs200. The look of these web resources will change once migration to Carmen is completed.

OHIO STATE

H&CS 200C - Crop Science

Hide Navigation

Home

- Course Menu
- Homepage
- Calendar
- Lectures
- Labs
- Tests
- My Grades
- Forums
- Mail
- Presentations
- HCS200 Syllabus
- Lab Photos
- Mid-term exam W104

HCS 200 - Crop Science

Welcome to the Course

You have reached this section because you are registered for the course and can participate in all of its activities.



[Calendar](#)



[Lectures](#)



[Labs](#)



[Tests](#)



[My Grades](#)



[Forums](#)



[Mail](#)



[Presentations](#)



[Course Syllabus](#)



[Final exam example \(PDF\) \(W104\)](#)



[Lab Photos](#)



[Mid-term exam W104 \(PDF\)](#)

Example of an Experiential Activity for H&CS 200 – The Science of Growing Plants

1. Climate Factors: What's Hot and What's Not.

Prior to class: Scan the news (newspapers, on-line sites such as the 'News' category in Google) and select an article on climate that piques your interest. Make sure the article has some relevance to the topics covered in the Climate lecture/content of the course and be prepared to explain the connection between the article and the lecture topic.

NOTE: climate is not the same as weather; the news article should relate to the broad issue of climate and not to, for example, a recent cold snap or hurricane or flooding.

For class: Bring a printed copy of the article to the assigned class period and be ready to briefly summarize the article to your group and then to the entire class, and to address questions that may arise.

2. Analysis of climate data.

Students will work in groups to analyze weather records for Ohio for the current and previous years and then calculate degree days for each of specific events (e.g. Black locust blooming, corn tasseling, etc) listed in class. Sample Data is presented below:

	A	B	C	D	E	F	G
1	2002		avg temp	max temp	min temp	Eto	rain
2	day	date	deg C	deg C	deg C	mm	mm
93	91	1-Apr	7.24	13.22	0.582	2.584	0.508
94	92	2-Apr	14.53	23.16	7.6	3.174	0
95	93	3-Apr	3.82	7.74	0.748	0.959	6.604
96	94	4-Apr	2.886	7.44	-2.212	1.656	0
97	95	5-Apr	3.19	6.638	0.414	1.889	0
98	96	6-Apr	1.327	6.339	-3.541	1.681	0
99	97	7-Apr	8.87	18.27	-0.809	3.322	0
100	98	8-Apr	17.01	22.5	9.17	2.534	1.778
101	99	9-Apr	14.18	20.08	8.24	1.574	3.302
102	100	10-Apr	11.29	18.21	3.086	3.442	0
103	101	11-Apr	18.4	28.41	4.749	4.589	0
104	102	12-Apr	19.49	25.8	14.56	3.057	3.048
105	103	13-Apr	16.83	21.83	14.06	1.593	5.842
106	104	14-Apr	16.06	19.28	14.06	0.63	27.69

Group discussions will focus on weather patterns in Ohio, the US and the world and what impact they have on agriculture. We will also examine the USDA Plant Hardiness Zone Map and the AHS Heat Zone Map to determine how the information in the maps may inform planting decisions.