

UNIVERSITY OF FLORIDA
Horticultural Sciences Department
VEC 3221C Fall 2016 Section 1172
HOS 6932 Fall 2016 Section 041C
Commercial Vegetable Production

Instructor: Bala Rathinasabapathi, Ph.D.
Room 2247, Fifield Hall
Phone 352-273-4847

Lecture: Mon, Wed and Fri 7th Period (1:55 pm – 2:45 pm)
Room 2316, Fifield Hall

Lab Fri 8th – 9th period (3:00 pm – 4:55 pm). Student vegetable gardens, Hull Road, Across from Fifield Hall

Office hours: By Appointment; e-mail brath@ufl.edu
Course Homepage: <http://www.hos.ufl.edu/vec3221.htm>

Optional Textbook:

Producing Vegetable Crops by Swiader JM and Ware GW., Interstate Publishers Inc., Danville, Illinois, 5th Edition, 2002. ISBN 0-8134-3203-0.

Other Optional References:

Vegetable Production Handbook For Florida 2006-2007, by Olson SM and Simone E (Eds.), University of Florida, IFAS Extension. 438 pp.

Articles from Florida Cooperative Extension Service, Journal of the American Society of Horticultural Science, Hortscience and American Vegetable Grower.

Objective:

The principles and practices of successful commercial vegetable production will be presented. Crop requirements, growth patterns and production techniques are emphasized along with discussion of consumption/marketing patterns in the U.S. and Florida production areas. The laboratory involves field trips to farming operations and guest lectures from individuals in the vegetable production industry. Each member of the class will also develop a vegetable garden with different crops suitable for Fall production and participate in vegetable crop production activities.

General Syllabus:

Lecture information and laboratory experiences will instruct the student in the specific production practices and technology, as well as other important information required to successfully grow various vegetable crops.

For each crop grouping, the student will learn:

1. The botanical classification, horticultural types, origin, and history of each crop.
2. The scope and importance of production in the US, including where the crop is grown, commercial acreage, value and average yields.
3. Important aspects of vegetable growth and development, especially in relation to plant response to environmental factors and how they may affect production practices.
4. Specific climatic and cultural requirements of each crop.
5. Methods of planting, plant spacing and populations, and specialized procedures such as seed treatments.
6. Standard and evolving production practices and requirements necessary for successful production.
7. Leading cultivars and their important characteristics and new developments in breeding of specific crops.
8. Pests and significant physiological disorders.
9. Harvesting procedures, post-harvest handling of crops and food safety issues.

Format:

4-credit course for majors and non-majors. No pre-requisites.

Evaluation:

Students will be evaluated based on the following:

Class attendance & participation	50 points
Lab reports & field trip reports	100 points
Class presentation	100 points
Written assignment	50 points
Tests	100 points
Final Exam	100 points
TOTAL	500 points

* Letter grades for the course will be assigned according to the chart below:

90-100 = A; 87-89 = A-; 84-86 = B+; 80-83 = B; 77-79 = B-; 74-76 = C+; 70-73 = C; 67-69 C-; 64-66 = D+; 60-63 = D; 57-59 = D-; 56-below = E.

* Class attendance will be marked each day either at the beginning or end or middle of the class period.

Grades for the course will be assigned according to established university policy.

Learning Outcomes:

By the completion of this course, the conscientious student should be able to

- Explain production details for major vegetables.
- Diagnose problems related to soil fertility, irrigation and pests of major vegetables.
- Find sustainable solutions to problems related to soil fertility, irrigation and pests of major vegetables.
- Choose vegetable cultivars suitable for a given region or production system.
- Enumerate advantages and disadvantages of various production systems.
- Propagate and cultivate a vegetable garden
- Critically analyze production and marketing data and
- Estimate cost of production for major vegetables.

Assignments and Lab reports and field trip reports:

(1) Transplant Production (10 points). Each student will generate vegetable transplants of at least two vegetable crops. Instructions, material and greenhouse space will be provided. Quality of the transplants and a report of this activity will be evaluated.

(2) Field Production of Vegetables (40 points). The students will cultivate a variety of vegetable cultivars as part of their laboratory. A group of students will tend one garden but each student will keep a field notebook of weekly observations and write a final report for evaluation. The final report should contain information about the crops and their varieties, crop stand, weather, irrigation, soil fertility management, insect pests, diseases and weeds encountered and how the problems were solved and the quality and quantity of vegetables harvested.

Students who participate in this course for HOS6932 Section 041C will do an additional variety trial on peppers and write a report. A separate handout on that will be distributed and discussed in class.

(3) Container gardens (10 points). Facilities to set up container gardens of warm season vegetables, greenhouse space, materials and instruction will be provided. This year's theme will be peppers. The quality of the crop and the final write up will be evaluated.

(4) Hydroponics (10 points). Facilities to set up hydroponics will be provided. Students will grow a crop of lettuce. The quality of the crop and the final write up will be evaluated.

(5) Field trip reports (30 points). The students need to write a summary of information and view points collected during field trips and invited speakers for 10 points each.

(6) Extra Credit. Students who can prepare a video presentation related to Horticulture careers will get 50 extra points. The edited video should be 5 minutes or longer, of good quality and is available for posting on YouTube. Please e mail me for more details if

you are interested in this project, but this can count toward your grade only if completed before Oct 30, 2016.

(7) Written assignment (50 points). Related to your class presentation, a short essay is expected. It should be not longer than 6 printed pages of text, contain at least two figures and at least three references cited or sources consulted. For graduate students, it will be an essay on their field experiment.

(8) The Graduate Field Project (100 points): Graduate students taking this course for **HOS6932** (sections 041C) need to do a field research/demonstration project in a specific crop, in addition to those listed in points (1) to (7) above.

Following a discussion in the classroom, students will develop an experimental design, research questions and hypotheses to be tested. Students will develop a plan to quantitatively measure growth, development, yield, quality traits of the vegetable crops using scientifically valid methods (20 points).

They will grow the plants and follow best practices of growing the crop (20 points).

They will collect quantitative data by taking measurements and qualitative data using photographs (20 points).

They will write a report including statistical analysis of quantitative data (20 points).

The students as a group make a Power Point presentation of their plan and their findings in two separate class presentations.

Course policies and procedures

- 1 Homework: Activity reports or other homework are due on the dates announced. 20% will be deducted for incomplete homework or not on time by one week. No credit will be given for labs or field trip reports one week after the due date. No homework will be accepted after the final class meeting. If you are having trouble with homework, please see me immediately.
- 2 Test Makeups will be arranged only in case of an emergency and must be scheduled within a week of the original test and at the convenience of the instructor.
- 3 Follow all safety regulations in and out of the classroom. Personal safety during labs and field trips is individual's responsibility.
- 4 By registering for classes, every student has signed the following statement: "I understand that the University of Florida expects its students to be honest in all their academic work. I agree to adhere to this commitment to academic honesty,

and understand that my failure to comply with this commitment may result in disciplinary action up to and including expulsion from the University”. Honor Code violations in this course will not be tolerated, and may result in the assignment of a failing grade. Students observing an Honor Code violation should report them to the instructor immediately.

- 5 All faculty, staff and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate.
- 6 Resources are available on-campus for students having personal problems or lacking clear career and academic goals which interfere with their academic performance. These resources include: University Counseling Center (392-1575), Personal counseling at Student Mental Health (392-1171), Sexual Assault Recovery Services (392-1161) and Career Resource Center (392-1601).

Schedule: Field trip and farm tour schedules are temporary and might change according to the convenience of the hosts and travel considerations. Guest lectures will be announced on specific topics and dates.

22 Aug 2016 Mon	Introduction & Syllabus, How to maintain a course notebook of observations. Reports.
24 Aug 2016 Wed	Importance of Vegetables
26 Aug 2016 Fri	Vegetable Seed Sources
26 Aug 2016 Fri	Lab 1 Vegetable Seed Sources <i>last day for drop/add</i>
29 Aug 2016 Mon	Major vegetables: Production Statistics & Information Resources
31 Aug 2016 Wed	“Building Better Peppers” – A project in plant breeding
2 Sep 2016 Fri	Vegetable Varieties I: Plant Breeding
2 Sep 2016 Fri	Lab 2 Transplant Production
5 Sep 2016 Mon	Labor day – No class
7 Sep 2016 Wed	Vegetable Varieties II: Plant Breeding
9 Sep 2016 Fri	Factors affecting Fall Vegetable Production

9 Sep 2016 Fri	Lab 3. Planting a Fall Vegetable Garden II
12 Sep 2016 Mon	GM Vegetable Crops I
14 Sep 2016 Wed	GM Vegetable Crops II
16 Sep 2016 Fri	Plant Nutrition
16 Sep 2016 Fri	Lab 4. Setting up a Container Garden of Vegetables Field Garden: Weeding, fertilizer application and pest control
19 Sep 2016 Mon	Plant Nutrition
21 Sep 2016 Wed	Hydroponics
23 Sep 2016 Fri	Nature and Properties of Soils
23 Sep 2016 Fri	Lab 5. Setting up a Hydroponics system Field Garden: Weeding, fertilizer application and pest control
26 Sep 2016 Mon	Soil fertility management
28 Sep 2016 Wed	Mulching
30 Sep 2016 Fri	Irrigation
30 Sep 2016 Fri	Lab 6. Setting up a drip irrigation system Field Garden: Weeding, fertilizer application and pest control
3 Oct 2016 Mon	Irrigation
5 Oct 2016 Wed	Insect pests on vegetable crops
7 Oct 2016 Fri	Insect pests on vegetable crops
7 Oct 2016 Fri	Observations and activities relating to labs 2 to 6. Fertilizer treatments to Container Garden and Adjustments to Hydroponics.
10 Oct 2016 Mon	Calculations on fertilizer requirements.
12 Oct 2016 Wed	Insecticides
14 Oct 2016 Fri	Insecticides
14 Oct 2016 Fri	Homecoming – No lab class
17 Oct 2016 Mon	Crop Diseases

19 Oct 2016 Wed	Crop Diseases.
21 Oct 2016 Fri	No lecture class this day. Field trip to Citra farm
24 Oct 2016 Mon	Fungicides
26 Oct 2016 Wed	Herbicides
28 Oct 2016 Fri	<u>Graduate students will present their first reports on their project.</u>
28 Oct 2016 Fri	Vegetable harvesting and photographs of all the labs set up so far. Harvested produce need to be quantified by weighing them immediately after harvest.
31 Oct 2016 Mon	Weed control
2 Nov 2016 wed	Pesticide sprayers and other applicators
4 Nov 2016 Fri	Harvest and Yield of Vegetables
4 Nov 2016 Fri	Lab 7. Identification of Weeds, Insects and Diseases. Take photos of all of the labs set up so far. (Each student needs to photograph his/her observations individually).
7 Nov 2016 Mon	Lab 8. Calibration of Pesticide Sprayers.
9 Nov 2016 Wed	Post-harvest handling of Vegetables
11 Nov 2016 Fri	Veteran's Day – No class
14 Nov 2016 Mon	Post-harvest handling of Vegetables
16 Nov 2016 Wed	Food safety issues (Guest speaker)
18 Nov 2016 Fri	Guest Speaker
18 Nov 2016 Fri	Lab 9. Pest control and Evaluation of the Crops.
21 Nov 2016 Mon	Tomato Production (Guest speaker)
23 Nov 2015 Wed	Thanksgiving – No class
25 Nov 2016 Fri	Thanksgiving – No class

28 Nov 2016 Mon	Lettuce and Endive Production
30 Nov 2016 Wed	Cucurbit Production
2 Dec 2016 Fri	Student presentations
2 Dec 2016 Fri	Garden clean up and Field notebook evaluation.
5 Dec 2016 Mon	Student presentations
7 Dec 2016 Wed	Student presentations/ Last day of class
