GREENHOUSE AND PROTECTED CROP PRODUCTION

HOS3222C / HOS6932 - 3 CREDITS

SPRING 2018

MEETING TIMES AND LOCATION

Fifield Hall room 2316 — Monday 1:55-2:45 pm (7th period); Wednesday 1:55-3:50 pm (7th and 8th period)

INSTRUCTOR

Gerardo Nunez — g.nunez@ufl.edu

TBD

TEACHING ASSISTANT

TBD

COURSE DESCRIPTION

Growers utilize a multitude of structures to protect their crops and enhance their production practices. This course will present an overview of the different technologies and practices utilized locally and globally to produce vegetables, small fruits, and other specialty produce. The first half of the semester will be devoted to learning about the makeup, configuration, and uses of protected structures, as well as the economic factors affecting the decision to pursue protected agriculture. The second half of the semester will focus on the different specialty crops currently grown in protected structures in the state.

LEARNING OBJECTIVES

Upon successful completion of this course, students will be able to:

- Demonstrate an appreciation for the role of the greenhouse and protected agriculture industry at the local, national, and global scales.
- Compare and evaluate different technologies used for greenhouse and protected agricultural production.
- Discuss key components and practices related to greenhouse and protected agricultural production and management systems.
- Develop production management plans to set up and maintain a successful greenhouse or protected agriculture operation that is environmentally and economically sustainable.

COURSE FORMAT

This is a team-taught course composed of guest lectures, demonstrations, hands-on activities, and field visits to commercial growers. There is no required textbook for this course, but learning materials (handouts, extension publications, journal articles, book chapters, websites) to be read before each class will be provided via Canvas.

COURSE WEBSITE

E-Learning at Canvas: **https://elearning.ufl.edu**

Students must familiarize themselves with the "Attendance", "Assignments" and "Grades" tabs of the HOS3222C mini-site in the Canvas platform. Digital copies of this syllabus, and other learning

materials can be found there. On occasion, printed versions of some of these documents will be required for in-class activities. Students will be notified of all such instances.

ATTENDANCE

Students are encouraged to attend every class. Attendance will be taken based on a *photo book*. Students must contribute to the creation of the course *photo book* by emailing the instructor a clear photo of their face during the first week of the semester. Each student is allowed one no-questions-asked absence. However, each subsequent unexcused absence will be penalized with a deduction of 1 point from the student's final grade. Absences due to medical emergencies, academic, or athletic engagements, etc. that are properly documented will be excused.

FIELD TRIP

Attendance to the field trip is required from all students (i.e., this cannot be used as your no-questions-asked excused absence). The field trip will take place on April 13th, 2018 from 7:00 am to 7:00 pm. The instructor will gladly provide written excuses for students who have other academic, athletic, or employment-related events happening on that day. Students who require these excuses must notify the instructor no later than April 1st, 2018.

COURSE GRADE

1. **Class summaries** **15 %**
   After every class meeting, students must submit a class summary through Canvas. Class summaries must be >100 words long, and include a synthesis of the topics covered in the previous class. Class summaries must be completed any time before the next class period, and they will be graded based on their content and presentation. Proper grammar, spelling, and punctuation are expected.

2. **Exams** **50 %**
   Students will be evaluated through two comprehensive exams roughly scheduled to coincide with the midpoint and endpoint of the semester. Each exam will be worth 25 % of the final grade. Exams will include questions requiring long and short answers. The instructor will provide the students with sample questions and hold a review session before each exam.

   Should any student have a documented emergency that prevents him/her from making the scheduled exam times, the instructor will provide one make-up exam per student at an agreed-upon time and place.

3. **Production management plan** **35 %**
   This multi-part project is the capstone assignment for this course. The objective is to encourage students to utilize all the resources at your disposal to compose a management plan that could be used to start and maintain a protected agriculture operation. As a whole, this project will test your research, critical thinking, and quantitative skills in similar ways as a job in horticulture would. Accordingly, expect this assignment (and not the course exams) to be the most challenging and relevant part of this course.

   The production management plan will consist of a crop profile, a fertilizer schedule, and a technology plan. The crop profile and technology plan will each be worth 10 % of the final grade. The fertilization schedule will be worth 15 % of the final grade. Additional details about these assignments are provided in Handouts 1, 2, and 3. Details on how to submit your assignments via Canvas are provided in Handout 4.

4. Extra Credit **+ 5 %**

Students who have not been penalized for unexcused absences can complete an optional assignment for extra credit. The extra credit assignment will consist of an exercise to create the least costly fertilizer schedule, given crop requirements and fertilizer cost data. Students who successfully complete the extra credit assignment will receive 5 points to be added to their final course grade. Students who choose not to complete this assignment will neither be penalized nor receive extra credit.

GRADING SCALE

A	93-100	C	73-76
A-	90-92	C-	70-72
B+	87-89	D+	67-69
B	83-86	D	63-66
B-	80-82	D-	60-62
C+	77-79	E	<60

COURSE POLICIES

Classroom Etiquette

Students are expected to be respectful learners. As such, they should arrive to and leave from class on time. Additionally, students should refrain from using electronic devices (laptops, tablets, and cellular phones) during class time, unless invited by the instructor. Activities such as talking, sleeping, eating, and studying for other classes should also be avoided. Students who repeatedly engage in disruptive behavior during a class period will be marked absent and/or asked to leave the room.

Academic Honesty

In 1995, the UF student body enacted a new honor code and voluntarily committed itself to the highest standards of honesty and integrity. When students enroll at the university, they commit themselves to the standard drafted and enacted by students.

The Honor Code: We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.

On all work submitted for credit by students at the university, the following pledge is either required or implied:

"**On my honor, I have neither given nor received unauthorized aid in doing this assignment.**"

The university requires all members of its community to be honest in all endeavors. A fundamental principle is that the whole process of learning and pursuit of knowledge is diminished by cheating, plagiarism and other acts of academic dishonesty. In addition, every dishonest act in the academic environment affects other students adversely, from the skewing of the grading curve to giving unfair advantage for honors or for professional or graduate school admission. Therefore,

the university will take severe action against dishonest students. Similarly, measures will be taken against faculty, staff and administrators who practice dishonest or demeaning behavior. Students should report any condition that facilitates dishonesty to the instructor, department chair, college dean or Student Honor Court.

It is assumed all work will be completed independently unless the assignment is defined as a group project, in writing by the instructor. This policy will be vigorously upheld at all times in this course. Additionally, the instructor reserves the right to analyze student submissions with originality-checking software to detect any academic misconduct.

Software Use

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 when appropriate.

Campus Resources

Students experiencing crises or personal problems that interfere with their general wellbeing are encouraged to utilize the university's counseling resources. The UF Counseling and Wellness Center provides a wealth of confidential, free counseling services to enrolled students.

- *Counseling and Wellness Center*, 3190 Radio Road, 392-1575**, www.counseling.ufl.edu**

Additionally, on-campus resources are available for students who would like orientation on choosing a major or planning their career.

- *Career Resource Center,* CR-100 Reitz Union, 392-1601, **www.crc.ufl.edu**

Students with Disabilities

The Disability Resource Center (DRC) coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues.

Students requesting classroom accommodation must first register with the DRC. The DRC will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodations.

- 0020 Reid Hall, 392-8565, **www.dso.ufl.edu/drc/**

Diversity

Student, faculty, and staff interactions with others from varied backgrounds and experiences foster a superior educational environment and healthier, more accurate understanding of how the world works and contribute to valuable dialogue in our increasingly global and multicultural world. The University of Florida and this instructor place great emphasis on affirming the diversity of the student body.

Hence, students in HOS3222C are encouraged to engage in meaningful intra- and inter-culture dialogue and jointly support a climate that is grounded in respect and inclusion for individuals of all of races, ethnic backgrounds, genders, and sexual orientations.

ONLINE COURSE EVALUATION PROCESS

Student assessment of instruction is an important part of the effort to improve teaching and learning. At the end of the semester, students are expected to provide feedback on the quality of instruction in this course using a standard set of university and college criteria. These evaluations are conducted online at **www.evaluations.ufl.edu.** Students will be notified of the specific times when evaluations are open.

GREENHOUSE AND PROTECTED CROP PRODUCTION

Spring 2018 Schedule

Date	Topic	Remarks
-Jan	**Introduction to greenhouses and protected agriculture** Lecture: Emmanuel Torres	
-Jan	**Environmental physiology of greenhouse crops** Lecture: Dr. Gerardo Nunez	Deadline to submit picture for photo book
-Jan	**Greenhouse economics and business planning** Guest lecture: Dr. Kevin Athearn	
-Jan	Martin Luther King, Jr. Day	– No class –
-Jan	**Marketing greenhouse produce** Guest lecture: Natalie Parkell	
-Jan	**Location, orientation and site selection** Lecture: Dr. Gerardo Nunez	
-Jan	**Structures and glazing** Guest lecture: Dr. Bob Hochmuth	
-Feb	**Greenhouse pests and diseases** Guest lecture: Dr. Janine Razze	Crop profile due
-Feb	**Biological control** Guest lecture: Dr. Lance Osborne	Tour of Plant Diagnostic Center
-Feb	**Hydroponic growth systems** Lecture: Dr. Gerardo Nunez	
-Feb	**Irrigation of containerized plants** Guest lecture: Dr. Paul Fisher	Greenhouse tour
-Feb	**Introduction to plant fertilization** Lecture: Dr. Gerardo Nunez	
-Feb	**Fertilization** Lecture: Emmanuel Torres	
-Feb	Fertilization practicum	Download practicum files and bring portable computer to class
-Feb	**Soilless media** Guest lecture: Dr. Bob Hochmuth	Hands-on exercise
-Feb and -Mar	Spring break – No class –	
-Mar	**Greenhouse heating and cooling** Guest lecture: Christian Christensen	Fertilization schedule due
-Mar	** Midterm exam ** **Light fixtures, lighting, and positioning** Lecture: Dr. Gerardo Nunez	
-Mar	**Strawberry production** Lecture: Emmanuel Torres	
-Mar	**Post-harvest technology** Guest lecture: Dr. Steven Sargent	
-Mar	**Bell pepper production** Lecture: Emmanuel Torres	

-Mar	**Cut flowers and ornamental production** Lecture: Emmanuel Torres	
-Mar	**Cucumber, melon, and squash production** Guest lecture: Dr. Xin Zhao	
-Mar	**Production in tropical and temperate areas** Lecture: Emmanuel Quezada	
-Apr	**Tomato production** Lecture: Emmanuel Torres	
-Apr	**Tomato grafting** Guest lecture: Dr. Xin Zhao	Hands-on exercise
-Apr	**Leafy green production** Guest lecture: Natalie Parkell, Wanda Laughlin	Technology plan due
-Apr	All day field trip – No class –	
-Apr	**Blueberry production in high tunnels** Lecture: Dr. Gerardo Nunez	
-Apr	** Final exam **	Extra-credit due