

PLANT BEHAVIOR

HOS4932 - 3 CREDITS

SPRING 2017

MEETING TIMES AND LOCATION

Tuesday 9:35 am - 10:25 am (3rd period)

Thursday 9:35 am – 11:30 am (3rd-4th period)

Little Hall room 0121

Select activities to be held in other locations on campus

INSTRUCTOR

Gerardo Nunez

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Fifield Hall 1113

(352) 273 - 4765

Wednesday 2:00 pm to 4:00 pm and by appointment

COURSE DESCRIPTION

Plants inhabit all continents on earth, and they have been companions to humans throughout history and even in outer space. Yet, there is much about plants that the general public does not know. This is a course aimed introducing students to how plants respond to stimuli and how humans have harnessed those responses to produce tasty and nutritious fruits and vegetables. The course revolves around three basic questions: What is a plant? What unique adaptations and responses do plants have? How do humans use plant responses? Topics covered will range from local to global and from ancient to cutting-edge. You will be encouraged to see plants under a new light through lectures, fruit tastings, hands-on demonstrations, and on-campus site visits.

LEARNING OBJECTIVES

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

- Discuss the biological characteristics all plants have in common.
- Explain in general terms how plants respond to drought, flood, light, shade, cold, heat, herbivory, and gravity.
- Articulate how human intervention turned wild plants into edible crops.
- Identify the naturally occurring processes used in biotechnology.
- Discuss modern practices related to intensive, sustainable fruit and vegetable production.
- Find and disseminate scientific information about topics in horticulture and plant science.

COURSE MATERIALS

What a Plant Knows by Daniel Chamovitz (ISBN 978-0-374-53388-5)

This is a required book for this course. Select chapters from this book will be assigned as readings to be completed before each lecture. Additional learning materials (handouts, publications, videos, images etc.) will be provided via Canvas.

Some in-class activities will require use of a personal computer, smartphone, or tablet computer. Specific dates for these activities can be found in the course schedule and timely reminders will be sent via Canvas.

COURSE WEBSITE

Even though this is a face-to-face course, *Plant Behavior* has a comprehensive mini-site in the Canvas platform. Take time to familiarize yourself with the “Start Here”, “Syllabus”, “Modules”, and “Grades” tabs in the navigation menu. Digital copies of this syllabus, and other learning materials can be found there.

- *E-Learning in Canvas*, www.elearning.ufl.edu

ATTENDANCE

You are encouraged to attend every class. Attendance will be taken based on a *photo book*. You must contribute to the creation of the course *photo book* by emailing a clear photo of your face during the first week of the semester.

Absences will be excused, late assignments will be graded, and make up-exams will be provided for documented emergencies as per UF’s attendance policy. However, I am aware that sometimes life throws you a *curve ball*. Thus, you are allowed one no-questions-asked absence per semester. Subsequent unexcused absences will make you ineligible for the Extra Credit assignment.

Additional information about UF’s attendance policy can be found here:

- *Attendance policy*, www.catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx

HANDS-ON ACTIVITIES AND FRUIT TASTINGS

This course is built with the intention of providing thought-provoking hands-on activities. Hence, your participation is important and encouraged. Please, follow all safety regulations and adhere to UF’s code of conduct during all in-class and on-site activities.

Additionally, in this course you will have the opportunity to taste common and unusual fruits. Fruit tasting is optional (but I will taste everything), and personal safety should be your number one priority when deciding whether or not to taste fruit samples.

COURSE GRADE

1. Class participation **10 points (5%)**

At the beginning of every class, two students will be chosen at random and asked to provide either a 2-minute verbal summary of the previous lecture or a summary of the assigned reading materials. These summaries will be graded out of 10 points. Most students will be asked to provide these summaries more than once in the semester. The average of your summary scores will be used as part of your class participation grade.

Additionally, you will be required to submit short deliverables (pictures, counts, etc.) for some of the in-class hands-on activities. These deliverables will be graded on completion and they will be part of your class participation grade.

2. Exams **100 points (50%)**

You will be evaluated through three non-cumulative exams scheduled to coincide with the end of each of the course modules. Exam #1 and exam #2 will be worth 15% of the final grade each. Exam #3 will be worth 20% of the final grade. Exams will test your knowledge and critical thinking through long and short answer questions. Exams will draw from materials covered during lectures and in-class activities, as well as assigned readings.

3. Popular science video **90 points (45%)**

This multi-part project is the capstone assignment for this course. The internet and social media are flooded with short, provocative videos about cooking, crafting, gaming, etc. Meanwhile, scientific knowledge is increasingly unappealing to the general public. The objective of this assignment is to produce a 3-minute video that depicts an exciting aspect of horticulture or plant biology.

This assignment will consist of four deliverables. First, you will choose a topic and briefly explain why you chose what you chose. This will be worth 5% of your grade. Next, you will write a 500-word research paper that provides the scientific background for your video. This will be worth 15% of your grade. Then, you will write a 200-word concept paper describing your plans for recording your video. This will be worth 5% of your grade. Finally, you will record, edit, and deliver a finished 3-minute video where you convey your research in a compelling, professional manner. This will be worth 20% of your grade. Additional details about these deliverables will be provided in Handouts 1, 2, 3, and 4.

4. Extra credit **+ 10 points (+5%)**

If you have not been penalized for unexcused absences, you can complete this optional assignment for extra credit. This assignment will consist of a 10-minute interview with the instructor about the remaining chapters of *What a Plant Knows* (those chapters not assigned during class). Think about it as a chat, rather than a question-answer interview. If you are interested in completing this assignment, you should schedule your interview via email no later than April 1st, 2016. All students who complete the extra credit assignment

will receive 10 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	=	185 - 210 points	C	=	< 154 - 146 points
A-	=	< 185 - 180 points	C-	=	< 146 - 140 points
B+	=	< 180 - 174 points	D+	=	< 140 - 134 points
B	=	< 174 - 166 points	D	=	< 134 - 126 points
B-	=	< 166 - 160 points	D-	=	< 126 - 121 points
C+	=	< 160 - 154 points	E	=	<120 points

Additional information on current UF grading policies for assigning grade points can be found here:

- *Grading policy*, www.catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

COURSE POLICIES

Classroom Etiquette

Students are expected to be respectful learners. As such, you should arrive to and leave from class on time. Additionally, you 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.

Written Communication

Effective written communication is essential for student and professional success. Whether you go on to become a horticulturist, an accountant, or a CEO, written communication will be a critical skill in your repertoire. Thus, the instructor places great emphasis on coaching and participating in professional, context-specific written communication.

All course-related email communication should be polite, professional, and as different from a text message as possible. For additional recommendations, consult:

- *Email etiquette*, www.advising.ufl.edu/docs/ProfessionalEtiquette.pdf

In addition to content, all written assignments will be evaluated with respect to proper spelling, grammar, punctuation, word usage, clarity, coherence, and organization. You are encouraged to use the resources provided by the UF Writing Studio to develop or enhance your writing skills. Free one-on-one tutoring (live and on-line) is available to enrolled students.

- *UF Writing Studio*, 302 Tigert Hall, 846-1138, www.writing.ufl.edu/writing-studio/

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 this standard.

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, all work submitted for credit by students will be analyzed 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

If you are experiencing crises or personal problems that interfere with your general wellbeing, I encourage you 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, if you would like orientation on choosing a major, finding an internship, or planning your career, I encourage you to use the university’s on-campus resources.

- *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.

If you would like to request classroom accommodations, you must first register with the DRC. The DRC will provide you with documentation that you must deliver to the instructor when requesting accommodations.

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

Diversity

The University of Florida and I place great emphasis on affirming the diversity of the student body. Student, faculty, and staff interactions with others from varied backgrounds and experiences foster a superior educational environment and nurture a healthier, more accurate understanding of how our increasingly global and multicultural society operates.

I encourage you to engage in meaningful intra- and inter-culture dialogue and 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, you 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:

- *Course evaluations*, www.evaluations.ufl.edu

Evaluations are typically open during the last two or three weeks of the semester. You will be notified of the specific times when evaluations for this course are open.

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Schedule – SPRING 2017

MODULE 1: What is a plant?

Date	Class topic and deliverables
Thu 5-Jan	Introduction to the course Lecture The evolution of plants
Tue 10-Jan	Activity Fossil plant garden Location Florida Museum of Natural History
Thu 12-Jan	Lecture Photosynthesis and nutrient uptake Submit Picture for photo book
Tue 17-Jan	Lecture Can plants move? Activity Meet <i>Mimosa pudica</i> Read What a plant feels – Daniel Chamovitz
Thu 19-Jan	Lecture Plant reproduction: the flower lecture Read <i>Flowering plants</i> – Woods and Caley Lecture Why do plants make fruits?: the fruit lecture Activity Miracle fruit tasting
Tue 24-Jan	Lecture Plant to plant communication: phytohormones Read What a plant smells – Daniel Chamovitz
Thu 26-Jan	Activity Hormone-treating a basil plant Lecture The scientific method Read What a plant hears – Daniel Chamovitz
Tue 31-Jan	Exam #1

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MODULE 2: How do plants respond to stimuli?

Date	Class topic and deliverables
Thu 2-Feb	Lecture Drought, flood, cold, and heat Read How plants manage water deficit and why it matters – Williams et al. Activity Finding water in the desert
Tue 7-Feb	Lecture Day and night Reading What a plant sees – Daniel Chamovitz
Thu 9-Feb	Lecture Light, shade, and color Activity Re-visit your basil plant and apply shade treatments to lettuce Location Horticultural Sciences Teaching Garden
Tue 14-Feb	Lecture Surviving herbivore attacks
Thu 16-Feb	Guest lecture Gravity Activity Insect herbivory Read How a plant knows where it is – Daniel Chamovitz
Tue 21-Feb	Lecture Global climate change Submit Popular science video topic and description
Thu 23-Feb	Exam #2 Lecture Finding scientific information

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MODULE 3: How do we use plant responses to produce fruits and vegetables?

Date	Class topic and deliverables
Tue 28-Feb	Lecture Plant domestication and the origins of agriculture Read Evolution, consequences, and future of plant and animal domestication - Diamond
Thu 2-Mar	Lecture Plant genetics Activity Transcribe-Translate-Relate Reading Experiments in Plant hybridization – Gregor Mendel
Tue 7-Mar Tue 9-Mar	Spring Break – no class –
Tue 14-Mar	Lecture Plant breeding Read Genetic improvements in agriculture (part 1) – Williams et al. 2011
Thu 16-Mar	Lecture Plant hybridization Activity Breeding Digitopsis Bring Breeder game installed on your personal computer to class Reading Genetic improvements in agriculture (part 2) – Williams et al. 2011
Tue 21-Mar	Lecture Plant biotechnology Read A Really Useful Pathogen – Williams and Yuan (2012) Submit Popular science video research paper
Thu 23-Mar	Activity Meet your mutant and the shovelomics scoreboard Lecture Grafting Reading A History of Grafting – Mudge et al. 2009
Tue 28-Mar	Activity Graft your own “citrus punch” tree Location Horticultural Sciences Teaching Garden
Thu 30-Mar	Lecture Greenhouses and soil-less cultivation
Tue 4-Apr	Activity Lettuce harvest from a hydroponic growth system Location Horticultural Sciences Teaching Garden Submit Popular science video concept
Thu 6-Apr	Lecture Organic and sustainable agriculture

	Reading	Understanding the USDA Organic Label – Treadwell and Swisher
Tue 11-Apr	Lecture	Pruning to grow tasty and nutritious fruit
	Activity	Tomato tasting
Thu 13-Apr	Lecture	Vineyards, orchards, and grooves for wine, cider, and limoncello
	Activity	Grapevine demonstration
	Location	Horticultural Sciences Teaching Garden
Tues 18-Apr	Lecture	Apps in agriculture
	Bring	Smartphone or tablet computer with selected Apps installed
	Submit	Popular science video
Finals week		Exam #3