HOS4304 – Horticultural Physiology

Fall 2025
3 credits

Meeting Times and Locations

Monday, Wednesday, and Friday — 11:45 AM to 12:35 PM (5th period)

Blueberry Research Building BLRB 154

Instructor

Gerardo Nunez, Ph.D.

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Fifield Hall 1113

(352) 273 - 4765

Office hours: Wednesdays 4:00 PM to 5:00 PM

in person or via Zoom

Course Prerequisites

BOT 2010C or BSC2010

Pre-Requisite Knowledge

Students are expected to be familiar with basic plant anatomy and morphology and horticultural farming systems at the start of this course. Additionally, students are expected to be familiar with basic chemistry and physics concepts, such as chemical bonds, kinds of organic molecules, electronegativity, light measurements, and kinds of energy (potential, chemical, kinetic, radiant, and electrical).

Course Description

This course covers basic concepts and processes of plant physiology, including water relations, nutrient absorption, photosynthesis, respiration, and carbohydrate partitioning. In order to deliver meaningful mastery of these contents, this course utilizes a combination of lectures and active-learning activities.

Course Learning Objectives

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

- Identify the parts of the plant at the cellular, tissue, and organ level.
- Summarize the physical and biological phenomena by which plants take up and transport water
- Summarize the photochemical and biochemical phenomena that mediate carbon fixation and energy flux in photosynthesis and respiration

- Synthesize how environmental conditions and cultural practices impact water uptake, photosynthesis, respiration, and - ultimately - horticultural productivity
- Write a paragraph that demonstrates a thorough understanding of plant physiology concepts and skillful use of academic language (terminology, tone, and grammar).

Course Materials

Textbooks

There is no required textbook for this course. The following textbook can be used to supplement and extend lecture topics.

- Fundamentals of Plant Physiology Taiz, Zeiger, Moller, & Murphy (ISBN 9781605357904)

Course Website

This course has a comprehensive mini-site in canvas. Take time to familiarize yourself with the "Start Here", "Syllabus", and module 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 and Participation

Students 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 the instructor 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. You cannot use your no-questions-asked absence on a date when exams, or assignments are due. Subsequent unexcused absences will make you ineligible for extra credit assignments.

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

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

This course requires active student participation. Students are expected to participate by asking and answering questions during lecture, as necessary. Also, there will be multiple, non-graded activities that provide opportunities for additional engagement. In most lectures, students will be invited to answer online prompts (delivered through QR codes that link to polleverywhere.com) using their cellular phones or other mobile devices. Students are expected to participate in these polls and discuss their answers with the whole class or in breakout groups.

Classroom Etiquette

Students are expected to be respectful learners. As such, you should arrive to and leave from class on time. Students who arrive 5+ minutes after the start of class will be marked late. Three late arrivals will be considered an absence.

Students should refrain from using electronic devices (laptops, tablets, and cellular phones) for activities that do not pertain to this course. Activities such as talking, texting, 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.

Communication Guidelines

Email

Email will be the main means of communication between us. Hence, it is critical that all course-related emails are polite, professional, and as different from a text message as possible. You must use your Gator Link email. Canvas messages will not be answered. For additional recommendations, consult:

- *Email etiquette*, https://www.inc.com/business-insider/email-etiquette-rules.html

Response Time and Feedback

I will reply to course emails within 48 hours of receiving them (barring for an emergency). If your email is time-sensitive (for example, an issue with a timed assignment), please indicate "Time sensitive" in the email subject line. I will make every attempt to respond to time sensitive emails received during business hours in a timely manner.

Exams and homework will be graded within 14 days of the assignment closing. Since both kinds of assignments are due at the end of each module, I will prioritize exams over homework. I use assignment rubrics and the comments section to provide positive and formative feedback about student answers. Once a grade is posted, I recommend you review your submission to find my feedback. If you have additional questions about your submission, please do not hesitate to visit me during office hours.

Challenging a Grade

All discrepancies in grading must be resolved within 7 days of the grade being posted in canvas. The instructor's memory is frail. Thus, grade disputes older than 7 days old will not be entertained unless proper excuse is provided (see attendance policy).

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 toolbox. Thus, I place great emphasis on coaching and participating in professional, context-specific written communication. Proper spelling, grammar, and punctuation are expected in all course assignments. 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/

Course Grading Structure

1. Class participation (10 points)

At the beginning of every class, two students will be chosen at random and asked to provide a 2-minute verbal summary of the previous lecture. Additionally, throughout the course there will be opportunities for students to interact with the instructor by asking or answering questions. Class interaction and class summaries will be graded according to the rubrics below. The sum of your class summary and class interaction scores will be used as your participation grade. These scores will be updated in canvas after each exam. If you are absent or late on the day you are called to give your verbal summary, you will receive a 0, unless you have a properly documented excuse.

Frequency of class interaction	Score
Never	1
Rarely	2
Sometimes	3
Often	4
Always	5

Quality of class summary	Score
Poor	1
Fair	2
Good	3
Very good	4
Excellent	5

2. Homework (20 points)

Students will be evaluated through three homework assignments. Each homework will contain 3 questions aimed at connecting plant physiology knowledge with horticultural applications. Each question must be answered in paragraph format in 150 words or more. Correct grammar, punctuation, and spelling are expected. Students can refer to personal notes, textbooks, and other sources, but they must work individually.

Each homework assignment will take approximately 2 hours of time to complete. We will discuss the correct answers to the homework questions during the class period that immediately follows the homework deadline. There will be three homework assignments in the semester; each will be graded out of 10 points. Your two highest scores will be used to compute your final grade.

Exam	Due date
Homework #1	09/26/25
Homework #2	10/24/25
Homework #3	12/03/25

3. Exams (60 points)

Students will be evaluated through three cumulative exams. Exams #1 and #2 will take place during regularly scheduled classes. Exam #3 will take place during finals week at the time indicated by the

University Registrar (see dates below). Each exam will be graded out of 20 points. Exams will include short- and long-answer questions focused on the most-recent 5 weeks of lecture material. *Exams will evaluate students' knowledge, critical thinking, and writing ability*. The best way to prepare for the exams is to complete homework assignments and practice exams conscientiously. Practice exams will be available a week before each exam and an optional review session will be held the evening before each exam.

Exam	Date
Exam #1	10/01/25
Exam #2	10/29/25
Exam #3	12/09/25 10:00 AM

Students will have the option of adding +2 extra credit points to their exam #1 and exam #2 grades if they improve and re-write their answers to the integrative learning question in each exam within 48 hours of receiving their scores. Extra credit points will be assigned to perfect and near-perfect answers. No partial credit will be given in the extra credit assignment. Students who choose not to complete the extra credit will neither receive points nor be penalized.

4. Infographic (10 points)

This course will introduce you to the basic processes inside a plant. These processes affect our daily lives because we are surrounded by plants (in our diets, clothes, landscapes, etc.). Students will outline and create an infographic where they explain a phenomenon from their daily life using their plant physiology knowledge. The infographic will allow me to evaluate your scientific knowledge and visual communication ability.

Deliverable	Due date
Concept	10/15/25
Infographic	11/21/25

Grading Scale

Grade	Points	Percentage
A	92 – 100	92 – 100
A-	< 92 - 90	< 92 - 90
B+	< 90 - 87	< 90 - 87
B	< 87 - 83	< 87 - 83
B-	< 83 - 80	< 83 - 80
C+	< 80 - 77	< 80 - 77
C	< 77 - 73	< 77 - 73

Grade	Points	Percentage
C-	< 73 - 70	< 73 - 70
D+	< 70 - 67	< 70 - 67
D	< 70 - 67	< 70 - 67
D-	< 67 - 63	< 67 - 63
S	< 60	< 60

Grading Policy

Course grading is consistent with UF grading policies.

Technical Support

UF Computing Help Desk & Ticket Number: All technical issues require a UF Helpdesk Ticket Number. The UF Helpdesk is available 24 hours a day, 7 days a week. https://helpdesk.ufl.edu/ | 352-392-4357

Academic Policies and Resources

Academic policies for this course are consistent with university policies. See https://syllabus.ufl.edu/syllabus-policy/uf-syllabus-policy-links/

Campus Health and Wellness Resources

Visit https://one.uf.edu/whole-gator/topics for resources that are designed to help you thrive physically, mentally, and emotionally at UF.

Please contact UMatterWeCare for additional and immediate support.

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 as appropriate.

Weekly Course Schedule

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Week of	Topic	Assessment	Due date
	Module 1: Plant-water relations		
Aug 22	Introduction to the course		
Aug 25	Cells, tissues, tissue systems, and organs		
Sep 01	Cell to cell water movement		
Sep 08	Stomata and transpiration		
Sep 15	Long distance water movement		
Sep 22	Factors affecting transpiration	Homework #1	09/26/25
	Module 2: Photosynthesis		
Sep 29	Light-dependent reactions of photosynthesis	Exam #1	10/01/25
Oct 06	CO_2 fixation reactions (C3, C4, and CAM)		
Oct 13	Factors affecting photosynthesis	Concept	10/15/25
Oct 20	Optimizing photosynthesis	Homework #2	10/24/25
Oct 27	Cellular respiration	Exam #2	10/29/25
	Module 3: Sugar use and transport		
Nov 03	Factors affecting respiration		
Nov 10	Sucrose and starch synthesis		
Nov 17	Phloem loading and unloading	Infographic	11/21/25
Nov 24	*Thanksgiving (no classes)*		
Dec 01	Source-sink relations	Homework #3	12/03/25
Dec 08	Finals week	Exam #3	12/09/25