HOS3430C – Nutrition of Horticultural Crops

Spring 2026
3 credits

Meeting Times and Locations

Monday and Wednesday, and Friday 1:55 PM to 3:50 PM (7th and 8th period)

Hort Teach 0130

Instructor

Gerardo Nunez, Ph.D. g.nunez@ufl.edu

Fifield Hall 1113

(352) 273 - 4765

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

in person or via Zoom

Course Prerequisites

SWS 3022 – Introduction to Soils in the Environment

Pre-Requisite Knowledge

Students are expected to be familiar with fruit and vegetable farming systems. Courses like HOS3020C – Principles of Horticultural Crop Production or PLS 3004C – Principles of Plant Science are great courses to pick up this content. Additionally, students are expected to have dexterity performing basic mathematical calculations and unit conversions.

Course Description

This course focuses on the biochemical, physiological, and environmental factors that affect the nutritional status and productivity of horticultural crops. In order to deliver meaningful mastery of these contents, this course utilizes a combination of lectures, quantitative exercises, and field activities.

Course Learning Objectives

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

- Explain how chemical and physical properties of soils and substrates affect nutrient movement and availability
- Identify essential nutrients for plant growth and discuss nutrient uptake mechanisms
- Assess strengths and weaknesses of different fertilizer types, sources, and application methods

- Sample for, submit, and interpret soil, water, and tissue tests
- Diagnose nutrient deficiencies and recommend corrective measures

Course Materials

Textbooks

There is no required textbook for this course. The following textbook can be used as reference materials. It is available as e-books through UF/IFAS Extension and UF Libraries.

- Handbook of Plant Nutrition Barker & Pilbeam (ISBN 978-1-4398-8198-9)

We will refer to the following fertilization manual often during the course. This document is available online, free of charge through the UF/IFAS Extension library.

- Vegetable Production Handbook of Florida Agehara et al. (EDIS publication CV292)

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

Personal Computer and Spreadsheet Software

A personal computer with Microsoft Excel 2023 or more recent will be required for in-class and at-home exercises. While tablet computers and web browsers can run Microsoft Excel, some of the functions we will use are not available in these versions of the software. Therefore, using a laptop computer where the software is downloaded is strongly recommended.

Microsoft Excel is available to you free of cost through UF Apps. You can download this software to all your devices using your GatorLink credentials.

- UF Apps, https://info.apps.ufl.edu/

For assistance with technical issues, you can refer to the following resources:

- Learning-support@ufl.edu | (352) 392-HELP - select option 2 | http://elearning.ufl.edu
- Library Help Desk support http://cms.uflib.ufl.edu/ask.

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 text messages 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. Exams (45 points)

You will be evaluated through three cumulative exams. Each exam will last 60 minutes, and it will be graded out of 15 points. Exams will include short- and long-answer questions focused on the most-recent 5 weeks of lecture material. Exam #1 and #2 will test your knowledge, quantitative skills, and critical thinking. I will provide a basic 4-function calculator for these exams. Exam #3 will test your ability to diagnose nutrient deficiencies. 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). The sum of your exam scores will be used as your exam grade.

Assessment	Date
Exam #1	02/04/26
Exam #2	03/25/26
Exam #3	3:00 PM on 4/30/26

A practice exam with its corresponding answer sheet will be available 7 days before each exam. Additionally, an optional review session will be held in Zoom at 5:00 PM the evening before each exam.

2. Fertilizer schedules (45 points)

This assignment will test your logical and quantitative skills to formulate three fertilizer schedules. Fertilizer schedules will develop mastery of spreadsheet software. I will provide templates and demonstrate the necessary calculations and formulas in class. You will have to apply and extend this knowledge to formulate a fertilizer schedule that meets crop nutritional requirements while minimizing

wasteful or polluting use of fertilizer inputs. Each fertilizer schedule will take you approximately 2 hours to complete. Each fertilizer schedule will be graded out of 15 points. The first two fertilizer schedules will be homework. The third fertilizer schedule will be an individual, in-class exercise. The sum of your scores will be used as your grade.

These assignments will require a fair degree of familiarity with spreadsheet software. Students who are unfamiliar with or need to brush up on their Excel skills should complete this tutorial before the start of the in-class activities.

- Excel Easy tutorial, www.excel-easy.com

3. Nutrient management practicum (10 points)

This practicum aims to aid in developing the technical skills necessary to successfully implement a nutrient management program. Students will perform permanent and occasional duties related to the setup and maintenance of a diverse horticultural operation. I will demonstrate all hands-on activities during class time, but you will have to use out-of-class time to successfully manage our crops and hydroponic growth systems. This will be your homework.

Duties will include planting, transplanting, pruning, training, fertilizer application, nutrient solution mixing, nutrient solution pH adjustment, leachate collection and analysis, soil, water, and tissue sampling. These activities will take place outdoors in warm or cold conditions -as long as it is safe to work outside.

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
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.

In-class Recording

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A "class lecture" is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To "publish" means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third-party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

Weekly Course Schedule

HOS3430C – Nutrition of Horticultural Crops – Spring 2026

Week of	Topic	Assessment	Due date
	Module 1: Water and soil		
Jan 12	Week 1: Soil testing and soil sampling		
Jan 19	Week 2: CEC, base saturation, and salinity		
Jan 26	Week 3: Soil acidity and alkalinity		
Feb 2	Week 4: Adjusting soil pH	Exam #1	02/04/26
	Module 2: Fertilizers		
Feb 9	Week 5: Fertilizer labels		
Feb 16	Week 6: Kinds of fertilizers		
Feb 23	Week 7: Crop nutritional requirements		
Mar 2	Week 8: Fertilizing hydroponic crops		
Mar 9	Week 9: Fertilizing agronomic crops	Fertilizer schedule for hydroponics	03/11/26
Mar 16	Spring Break		
Mar 23	Week 10: Fertilizing row crops	Exam #2	03/25/26
	Module 3: Nutrient uptake and deficiencies		
Mar 30	Week 11: Nutrient uptake and essential elements	Fertilizer schedule for row crops	04/01/26
Apr 6	Week 12: Nitrogen		
Apr 13	Week 13: Other macronutrients		
Apr 20	Week 14: Micronutrients	In-class fertilizer schedule	04/22/26
Apr 27	Finals week	Exam #3	04/30/26