Nutritional Management of Nursery Crops ORH4256/HOS5432

Spring 2026
Online Asynchronous, 3 credits

Instructor

Dr. Kimberly Moore
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Office hours:
Book time to meet with me
Join Zoom Meeting
https://ufl.zoom.us/j/4945104654

Course Description

Techniques for determining, interpreting, and managing the nutritional status of container grown greenhouse and nursery crops. Includes water quality, substrate physical and chemical parameters, irrigation, and fertilization practices.

Course Overview and Purpose

This is an online course presenting techniques for determining, interpreting, and managing the nutritional status of ornamental crops in the greenhouse, nursery, or landscape. Topics that will be covered: water quality, substrate physical and chemical parameters, and irrigation/fertilization practices, meter selection and calibration, water analysis, substrate/soil analysis, report interpretation and writing, diagnosis, and recommendations

Course Prerequisites

Junior or senior standing. Pre-requisite knowledge will be reviewed in week 2 of the course.

Course Learning Objectives

The objective of this course is for students to use a systematic approach for diagnosing plant problems related to soil/substrate, nutrition, fertilization, and water management.

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

- Define and explain common terms related to plant nutrition and nutrient uptake movement
- Compare and contrast the impact of environmental conditions on nutritional issues
- Interpret visual clues to diagnose nutritional problems
- Interpret soil and water analysis reports
- Diagnose nutritional issues and recommend solutions to correct the problem

Textbooks, Learning Materials, and Supply Fees

OPTIONAL - Jones, J. Benton. 2012. *Plant Nutrition and Soil Fertility Manual 2nd Edition*. CRC Press, New York. ISBN -978-1-4398-1609-7 (OPTIONAL)

Additional Reading (optional)

- Agnew, M.L., N.H. Agnew, N.E. Christians, and A. M. VanDerZanden. 2008. Mathematics for the Green Industry. John Wiley & Sons Inc. Hoboken, NJ.
- Epstein, E. and A.J. Bloom. 2004. *Mineral Nutrition of Plants: Principles and Perspectives*. Sinauer Association Inc. Sunderland Mass.
- Glass, A.D. M. 1989. *Plant Nutrition. An Introduction to Current Concepts*. Jones and Bartlett Publishers Inc, Boston. ISBN 0-86720-080-4
- Marschner, H. 1995. *Mineral Nutrition of Higher Plants, Second Edition*. Academic Press, New York.
- Mengel, K. E.A. Kirby, H. Kosegarten, and T. Appeal. 2001. *Principles of Plant Nutrition*. Kluwer AC Pub., Boston.
- Reed, D.W. (ed) 1996. *Water, Media, and Nutrition for Greenhouse Crops*. Ball Publishing, Batavia, IL.
- Whipker, B.E., J.M. Dole, T.J. Cavins, J.L. Gibson, W.C. Fonteno, P.V. Nelson, D.S. Pitchay, and D.A. Bailey. *Plant Root Zone Management.* North Carolina State University. (www.nccfga.org)

Instructor's Interaction Plan

- Expect an instructor response to email and Canvas message within 24 hours, during weekdays and withing 72 hours on weekend.
- Please do not wait until the weekend to complete assignments, as I may not be available to answer emails or messages as quickly.
- Expect instructor feedback for submitted assignments within one week past the assignment deadline.
- If you ever have questions or need clarification on instructor feedback, please message or schedule a meeting using Book time to meet with me.
- I will email the class at the beginning of the week to outline the topic for the week and remind you what is due that week.
- I will monitor and read the discussions. I may post to the entire class, within groups, or message you individually concerning the discussion to give you feedback.
- I invite your feedback in both midterm and end-of-term GatorEvals and plan to continuously improve student experience within the course. Your opinion is highly valued.

Required Technology & How to Obtain Technology

- Links to all downloadable resources are provided. These resources include software and online tools, apps, plug-ins such as PDF Reader, media players, collaboration tools, social media, interactive multimedia apps, etc.
- Instructions are provided for how to access materials available through the institution's library or subscription services, including online journals or databases. When available, links are also provided.

Digital Information Literacy Skills

- Using online libraries and databases to locate and gather appropriate information
- Using computer networks to locate and store files or data
- Using online search tools for specific academic purposes
- Analyzing digital information for credibility, currency, and bias
- Properly citing information sources
- Preparing a presentation ore written report of research findings

Technical Skills

- Using the learning management system (Canvas)
- Using email with attachments
- Creating and submitting files in commonly used word processing program formats
- Using spreadsheet programs
- Using presentation and graphics programs
- Using web conferencing tools and software

Communication Guidelines

- Use **Course Question Discussion Board**, for general course questions that others may have too.
- Use **Canvas Inbox (messaging tool)** for questions that are specific to your grades or submissions.
- **Email & phone correspondence** are for (1) setting a meeting time for office hours, (2) DRC accommodations; (3) emergency situations; or (4) highly sensitive situations.
- A respectful tone is used by all community members in all forms of communication.
- Written communication, both formal and informal, uses the official language of instruction rather than popular online abbreviations and graphic elements such as those sometimes used in social media.
- Video interactions reflect a respectful tone in verbal communications and body language.
- Spelling, punctuation, and grammar are correct.

Class Demeanor/Expectations

This is an online course with weekly lectures and assignments. The week begins on Monday and ends on Sunday. Students are expected to login to the course website at least once a week to watch the narrated lecture and complete the assignments. Each week also offers OPTIONAL MATERIALS created to help students understand the topic of the week.

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

Weekly Course Schedule

Week of	Topic and Assignments	Due Date – 5 pm Eastern Time
Module 1		
Jan 12	***Introduction/Appraising the Problem***	
	Optional Reading – Chapters 1 & 5	
	Lecture 1 – narrated Power Point	
	Discussion - Ponder the Scenario	Jan 18
Jan 19	***Essential Elements***	
	Optional Reading – Chapter 3	
	Lecture 2 – narrated Power Point	
	Discussion - Phosphorus and algae (10 pts)	Jan 21
Jan 26	***Nutrient Uptake Mechanisms***	
	Optional Reading – Chapter 4	
	Lecture 3 – narrated Power Point	
	Discussion - Arsenic (10 pts)	Jan 28
Feb 2	***Visual Diagnosis/Tissue Analysis – pros and cons***	
	Optional Reading – Chapter 17	
	Lecture 4 – narrated Power Point	
	Discussion - I just fertilized . . . (10 pts)	Feb 4
	Module 1 Quiz (25 pts)	Feb 8
Feb 9	***Challenge - Banana (25 pts)*** ***Graduate student – article review (25 pts)***	Feb 15
Module 2		
Feb 16	***Meter calibration - Why is this important?***	
	Optional Reading – Chapter 16	
	Lecture 5 – narrated Power Point	
	Discussion - Training employees (10 pts)	Feb 18
Feb 23	***Substrate – Physical properties***	
	Optional Reading – Chapter 7	
	Lecture 6 – narrated Power Point	
	Discussion - Melon turning yellow (10 pts)	Feb 25
Mar 2	***Substrate-Chemical properties – Soil report interpretation***	
	Optional Reading – Chapter 8	
	Lecture 7 – narrated Power Point	
	Discussion - Same deficiencies (10 pts)	Mar 4
Mar 9	***Water quality – Water report interpretation***	
	Optional Reading – Chapter 22	
	Lecture 8 – narrated Power Point	
	Discussion - Hard water (10 pts)	Mar 11
	Module 2 Quiz (25 pts)	Mar 15
Mar 16	***Spring Break***	

Week of	Topic and Assignments	Due Date – 5 pm Eastern Time
Mar 23	***Challenge Site Visit (25 pts)*** ***Graduate student - article review 2 (25 pts)***	Mar 29
Module 3		
Mar 30	***Fertilizer analysis***	
	Optional Reading – Chapter 19 & 20	
	Lecture 9 – narrated Power Point	
	Discussion - Poinsettia (10 pts)	Apr 1
Apr 6	***Nutrient Use Efficiency***	
	Optional Reading – Chapter 27	
	Lecture 10 – narrated Power Pont	
	Discussion - Respect the soil (10 pts)	Apr 8
Apr 13	***Mismanagement Issues***	
	Optional Reading – Chapter 26	
	Lecture 11 – narrated Power Point	
	Discussion - Growing plants without water (10 pts)	Apr 15
Apr 20	***Challenge me (25 pts)***	Apr 26
	Challenge Nassau (25 pts) ***Graduate student- article review 3 (25 pts)***	Apr 26
Apr 27	***Catch up***	Apr 30

Grading Policy

LIFE HAPPENS - There is a 4-day grace period for all discussion posts and assignments. The discussion and assignment will be locked 4 days after the due date. HOWEVER, I will accept discussions and assignments in the last week of class for HALF the points.

Discussion posts: Discussion posts must be completed by **Wednesday** at 5 pm ET. Discussion posts should be well written and address the issue or question being discussed. All posts should be made within the week assigned. Discussions will be graded on the quality and timeliness of the response (see discussion grading rubric below). Each student is expected to comment on **two classmates' posts**. Discussion posts will be accepted up to four days after the due date but will be marked down 2 points. They are worth 10 points.

Module quiz: The quiz will cover material discussed in the lectures in that module. It is open notes/book. It is timed. Each quiz is worth 25 points. The quizzes will cover terminology and general concepts related to plant nutrition.

Challenge assignments: Students will be given nutritional problems as well as other pertinent data (water quality, fertilization and irrigation practice, substrate physical and chemical parameters) and the student will be asked to: 1) determine the nutritional problem, and 2) develop a recommendation or solution for the problem. Students need to **reference the literature** they find related to the problem and solution in their write-up.

Challenge me
Find a plant problem to challenge me. Take pictures and collect data. The report needs to include description of the location; plant identification, symptoms, and care; and data collected (substrate, water, and environmental). Please use the same challenge write up for this assignment.

Course Grading Structure

Assignment Type	Point Value	Percent of Final Grade (ORH4256)	Percent of Final Grade (HOS5432)
Discussions (10)	10	40	31
Quizzes (2)	25	20	15
Challenges (4)	25	40	31
Graduate article reviews (3)	25	----	23

Grading Scale

See the current UF grading policies for more information.

Grade	Points-ORH4256	Points-HOS5432	Percentage
A	237-250	309-325	95-100
A-	225-236	293-308	90-94
B+	220-224	286-292	88-89
B	213-219	277-285	85-87
B-	200-212	260-276	80-84
C+	195-199	254-259	78-79
C	188-194	244-253	75-77
C-	175-187	228-243	70-74
D+	170-174	221-227	68-69
D	163-169	212-220	65-67
D-	150-162	195-211	60-64
S	0-149	0-194	0-59

Attendance & Make-up Work

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies. UF Attendance Policies

LIFE HAPPENS - There is a 4-day grace period for all discussion posts and assignments. The discussion and assignment will be locked 4 days after the due date. HOWEVER, I will accept discussions and assignments in the last week of class for HALF the points.

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.

Artificial Intelligence Policy

Purpose: The aim of this policy is to ensure the responsible and ethical use of generative AI tools. The use of such technology should enhance learning and creativity while maintaining academic integrity.

Acceptable Use: Students are encouraged to use generative AI tools for the following purposes:

- Generating ideas and brainstorming for assignments and projects.
- Improving their writing through AI-assisted feedback and suggestions.
- Properly citing information in assignments using APA style.

Unacceptable Use: Students must not use generative AI tools for the following purposes:

- Completing quizzes, exams, or any other assessments meant to test individual understanding and knowledge.
- Submitting AI-generated content as their own work without proper attribution.

Academic Integrity:

- Any use of AI-generated content must be clearly attributed. This includes wording, ideas, or structures derived from AI tools.
- Proper APA citations must be used to reference all AI-assisted contributions in assignments.
- Failure to disclose the use of AI can be considered a form of academic dishonesty and result in disciplinary action.

Student Privacy Disclaimer

For online course with recorded materials a statement informing students of privacy related issues such as:

Our class sessions may be audio-visually recorded for students in the class to refer to and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.]

Course Evaluation Process

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online. Students can complete evaluations in three ways:

1. The email they receive from GatorEvals,
2. Their Canvas course menu under GatorEvals, or
3. The central portal at https://my-ufl.bluera.com

Guidance on how to provide constructive feedback is available at https://gatorevals.aa.ufl.edu/students/. Students will be notified when the evaluation period opens. Summaries of course evaluation results are available to students at https://gatorevals.aa.ufl.edu/public-results/.

Software Use

All faculty, staff and students at 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.

Student Complaints:

- Residential Course: https://www.sfa.ufl.edu/written-student-complaints/
- Online Course: https://pfs.tnt.aa.ufl.edu/state-authorization-status/#student-complaint

Privacy and Accessibility Policies

For information about the privacy policies of the tools used in this course, see the links below:

- Adobe
  - Adobe Privacy Policy
  - Adobe Accessibility
- Instructure (Canvas)
  - Instructure Privacy Policy
  - Instructure Accessibility
- Educreations
  - Educreations Privacy
  - Educreations Accessibility
- Microsoft
  - Microsoft Privacy Policy
  - Microsoft Accessibility
- Perusall
  - Perusal Accessibility
  - Perusal Privacy
- Sonic Foundry (Mediasite Streaming Video Player)
  - Sonic Foundry Privacy Policy
  - Mediasite Accessibility (PDF)
- TechSmith
  - TechSmith Privacy Policy
  - TechSmith Accessibility
- VoiceThread

    - VoiceThread Privacy Policy
    - VoiceThread Accessibility
- YouTube (Google)
    - YouTube (Google) Privacy Policy
    - YouTube (Google) Accessibility
- Zoom
    - Zoom Privacy Policy
    - Zoom Accessibility