



PLS 327, Hydroponic Crop Production

COURSE SYLLABUS: SPRING 2025

INSTRUCTOR INFORMATION

Instructor: Desire Djidonou, (Dr. D), Assistant Professor – Urban/Sustainable Horticulture

Office Location: Ag/ET 248

Office Hours: M 10 – 12 pm; W 10 – 11 am;

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Preferred Form of Communication: email

COURSE INFORMATION

Time & location: Web-based

Lab: F 9:00a – 10:50a in the PSC 101 classroom.

Materials – Textbooks, Readings, Supplementary Readings

There is no required textbook for this course. Digital copies of selected chapters from the books below will be provided.

1. Resh, Howard M. 2012. ***Hydroponic Food Production: A Definitive Guidebook for the Advanced Home Gardener and the Commercial Hydroponic Grower*** (7th edition). Taylor & Francis Group (publishers).
2. Sonneveld, C. and Voogt, W. 2009. ***Plant Nutrition of Greenhouse Crops***. Springer.

Course Description

This course provides a foundational knowledge on principles and practices of hydroponic crop production in controlled environment agriculture (CEA), including types of hydroponic systems, nutrient solution preparation and management, aerial environmental production factors and their manipulation, emerging indoor vertical farming. Specific cases of hydroponic production practices of major vegetables (leafy greens, culinary herbs, and fruit crops such as tomatoes, peppers, cucumbers, and strawberries) will be discussed.

Prerequisites: PLS 1315 or PLS 1307

The syllabus/schedule are subject to change.

Student Learning Outcomes

At the end of this course, students will be able to:

1. Describe specific hydroponic systems for successfully growing leafy greens, culinary herbs, and fruiting vegetables;
2. Estimate plant mineral nutrient requirements for accurately formulating and managing nutrition solution in specific hydroponic crop production system;
3. Describe the plant responses to aerial environmental factors and their optimization for food production in controlled environment systems.

COURSE REQUIREMENTS

Minimal Technical Skills Needed

Basic knowledge of Microsoft office (Word, Excel, and PowerPoint) and familiarity with D2L. Students will need reliable internet access to retrieve course materials and submit homework assignments.

Instructional Methods

Lectures: Course materials (PowerPoint slides, additional reading materials, videos, and other multimedia materials) will be available on the course D2L page.

Labs: the labs activities provide some hands-on experiences on hydroponic production of selected crops. Specifically, we will grow a number of vegetable crops (lettuce, basil, spinach, tomato, bell peppers) from seeding to harvest.

Note: Unlike field-grown crop, hydroponically-grown crops require continuous care and attention on a daily basis. Therefore, as we start growing plants in the greenhouse, students will be assigned to come check on the systems to ensure proper functioning of the hydroponic system outside of the scheduled class time and even during the weekend.

Student Responsibilities

Expectation of Students

1. Students are expected to review course materials within two days after being posted on D2L to follow the course progress;
2. Completion of assignments and exams by the due dates;
3. Late submission of assignments or make-up of exams and other work in this course will only be allowed for legitimate, pre-excused absences.

ASSESSMENTS and GRADING

Course evaluation

Midterm Exam.....	100 points
Final Exam....	100 points
Lab Participation and Reports.....	100 points
Homework Assignments.....	100 points

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Exams: There will be two one-hour exams taken through D2L. The exams will include material from lectures, additional reading assignments, and hands-on activities. Exam dates are given below in the tentative semester schedule.

Lab reports: You will be required to submit an individual report on each lab activity covered.

Homework assignments: There will be 5 homework assignments posted on D2L with due date.

Grade Assignment

Letter grades for the course will be assigned according to the chart below:

A = 90%-100%

B = 80%-89%

C = 70%-79%

D = 60%-69%

F = 59% or Below

TECHNOLOGY REQUIREMENTS

LMS

All course sections offered by East Texas A&M University have a corresponding course shell in the myLeo Online Learning Management System (LMS). Below are technical requirements

LMS Requirements:

<https://community.brightspace.com/s/article/Brightspace-Platform-Requirements>

LMS Browser Support:

https://documentation.brightspace.com/EN/brightspace/requirements/all/browser_support.htm

YouSeeU Virtual Classroom Requirements:

<https://support.youseeu.com/hc/en-us/articles/115007031107-Basic-System-Requirements>

ACCESS AND NAVIGATION

You will need your campus-wide ID (CWID) and password to log into the course. If you do not know your CWID or have forgotten your password, contact the Center for IT Excellence (CITE) at 903.468.6000 or helpdesk@tamuc.edu.

Note: Personal computer and internet connection problems do not excuse the requirement to complete all course work in a timely and satisfactory manner. Each student needs to have a backup method to deal with these inevitable problems. These methods

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might include the availability of a backup PC at home or work, the temporary use of a computer at a friend's home, the local library, office service companies, Starbucks, a TAMUC campus open computer lab, etc.

COMMUNICATION AND SUPPORT

If you have any questions or are having difficulties with the course material, please contact your Instructor.

Technical Support

If you are having technical difficulty with any part of Brightspace, please contact Brightspace Technical Support at 1-877-325-7778. Other support options can be found here:

<https://community.brightspace.com/support/s/contactsupport>

COURSE AND UNIVERSITY PROCEDURES/POLICIES

Course Specific Procedures/Policies

Attendance to lab activities are required unless ill.

Syllabus Change Policy

The syllabus is a guide. Circumstances and events, such as student progress, may make it necessary for the instructor to modify the syllabus during the semester. Any changes made to the syllabus will be announced in advance.

University Specific Procedures

Student Conduct

All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. The Code of Student Conduct is described in detail in the [Student Guidebook](#).

<http://www.tamuc.edu/Admissions/oneStopShop/undergraduateAdmissions/studentGuidebook.aspx>

Students should also consult the Rules of Netiquette for more information regarding how to interact with students in an online forum: <https://www.britannica.com/topic/netiquette>

TAMUC Attendance

For more information about the attendance policy please visit the [Attendance](#) webpage and [Procedure 13.99.99.R0.01](#).

<http://www.tamuc.edu/admissions/registrar/generalInformation/attendance.aspx>

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/academic/13.99.99.R0.01.pdf>

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Academic Integrity

Students at East Texas A&M University are expected to maintain high standards of integrity and honesty in all of their scholastic work. For more details and the definition of academic dishonesty see the following procedures:

[Undergraduate Academic Dishonesty 13.99.99.R0.03](#)

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/undergraduates/13.99.99.R0.03UndergraduateAcademicDishonesty.pdf>

[Graduate Student Academic Dishonesty 13.99.99.R0.10](#)

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/graduate/13.99.99.R0.10GraduateStudentAcademicDishonesty.pdf>

AI use in course

East Texas A&M University acknowledges that there are legitimate uses of Artificial Intelligence, ChatBots, or other software that has the capacity to generate text, or suggest replacements for text beyond individual words, as determined by the instructor of the course.

Any use of such software must be documented. Any undocumented use of such software constitutes an instance of academic dishonesty (plagiarism).

Individual instructors may disallow entirely the use of such software for individual assignments or for the entire course. Students should be aware of such requirements and follow their instructors' guidelines. If no instructions are provided the student should assume that the use of such software is disallowed.

In any case, students are fully responsible for the content of any assignment they submit, regardless of whether they used an AI, in any way. This specifically includes cases in which the AI plagiarized another text or misrepresented sources.

13.99.99.R0.03 Undergraduate Academic Dishonesty

13.99.99.R0.10 Graduate Student Academic Dishonesty

Students with Disabilities-- ADA Statement

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact:

Office of Student Disability Resources and Services

East Texas A&M University

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Gee Library- Room 162

Phone (903) 886-5150 or (903) 886-5835

Fax (903) 468-8148

Email: studentdisabilityservices@tamuc.edu

Website: [Office of Student Disability Resources and Services](#)

<http://www.tamuc.edu/campusLife/campusServices/studentDisabilityResourcesAndServices/>

Nondiscrimination Notice

East Texas A&M University will comply in the classroom, and in online courses, with all federal and state laws prohibiting discrimination and related retaliation on the basis of race, color, religion, sex, national origin, disability, age, genetic information or veteran status. Further, an environment free from discrimination on the basis of sexual orientation, gender identity, or gender expression will be maintained.

Campus Concealed Carry Statement

Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in East Texas A&M buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun. Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and East Texas A&M Rule 34.06.02.R1, license holders may not carry a concealed handgun in restricted locations.

For a list of locations, please refer to the [Carrying Concealed Handguns On Campus](#) document and/or consult your event organizer.

Web url:

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/34SafetyOfEmployeesAndStudents/34.06.02.R1.pdf>

Pursuant to PC 46.035, the open carrying of handguns is prohibited on all East Texas A&M campuses. Report violations to the University Police Department at 903-886-5868 or 9-1-1.

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COURSE OUTLINE / CALENDAR

Lecture: Web-based

Lab: F 9:00a-10:50a

Location: PSC 101

Lecture and Lab Schedule

Week	Date	Lecture Topic	Lab activities
1	Jan 13 – 17	Lecture 0: Welcome – syllabus overview	-
		Lecture 1: Overview of Controlled Environment Agriculture (CEA) and Hydroponics	-
			Greenhouse tours
2	Jan 20 – 24	Lecture 2: Types of Hydroponic Systems	-
		Lecture 3: Growing Substrates for Hydroponics	-
			Lab work: Seed sowing
3	Jan 27 – 31	Lecture 4: Plant Nutrition Basics	-
		Lab work: Preparing NFT systems for Transplanting	
4	Feb 03 – 07	Lecture 5: Hydroponic Nutrient Solution: Formulation & Management	-
		Lab work: Preparing NFT systems for Transplanting	
5	Feb 10 – 14	Lecture 6: Fertilizer Calculation Basics for Hydroponics	-
		Excel Practices	-
		Lab work: Nutrient Solution Preparation and Transplanting	
6	Feb 17 – 21	Lecture 7: Aerial Environmental Factors and Plant Growth: Light	-
		Lab work: Crop maintenance and NFT systems management	
7	Feb 24 – 28	Lecture 8: Aerial Environmental Factors and Plant Growth: Temperature, CO₂, Relative Humidity, Wind	-
		Lab work: Assembling small-size DWC systems	
8	Mar 03 – 07	Mid-term EXAM	-
		Lab work: Plant and NFT management	
9	Mar 10 – 14	SPRING BREAK	
10	Mar 17 – 21	Lecture 9: Hydroponic Production of Leafy Greens: Lettuce, Basil, and Microgreens	-
		Lab work: Plant and NFT management	

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11	Mar 24 – 28	Lecture 10: Hydroponic Production of Vine Crops: Tomatoes	-
		Lab work: Plant management and NFT clean-up	
12	Mar 31 – Apr 04	Lecture 11: Hydroponic Production of Vine Crops: Peppers and Cucumbers	-
		Lab work: Plant management	
13	Apr 07 – 11	Lecture 12: Hydroponic Production of Strawberries	-
		Lab work: Plant management	
14	Apr 14 – 18	Lecture 13: Emerging CEA – Hemp/Cannabis production under controlled environment	-
		Lab work: Plant management	
15	Apr 21 – 25	Lecture 14: Aquaponics	-
16	Apr 28 – May 02	Trials termination and clean-up	
17	May 05 – 09	FINAL EXAM	

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