PLS 597 Hydroponic Crop Production

COURSE SYLLABUS: SUMMER I 2020

INSTRUCTOR INFORMATION

Instructors:
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Preferred Form of Communication: email

COURSE INFORMATION

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.

- *Hydroponic Food Production: A Definitive Guidebook for the Advanced Home Gardener and the Commercial Hydroponic Grower, Resh, Howard M., Taylor & Francis Group, Seventh Edition, 2012*
- *Plant Factory: An Indoor Vertical Farming System for Efficient Quality Food Production, Editors: Toyoki Kozai,* ***Genhua Niu****, Michiko Takagaki, Academic Press, 2020. Second Edition*

Course Description

This course provides a foundational knowledge on hydroponic crop production practices and management. Topics include the historical perspective, basic principles and types of hydroponic systems. Additionally, students will be introduced to soilless growing substrates, nutrient solution preparation and management, crop response to aerial

environmental factors and their manipulation, new technologies inherent to controlled environment agriculture (plant factories, vertical farming). Specific cases of hydroponic production practices of major vegetables (leafy greens, solanaceous, cucurbits, and strawberries), culinary herbs and emerging crops will be discussed.

Student Learning Outcomes

When successfully completing this course, a student should have:

1. developed a theoretical knowledge and practical understanding of the science and techniques of hydroponic crops production;
2. Demonstrated an understanding of the basic plant mineral nutrient requirements and nutrition solution monitoring procedures in a hydroponics system;
3. demonstrated proficiency in selecting specific hydroponic systems for successfully growing leafy greens, culinary herbs, and vegetables;
4. Gained an understanding of plant responses to aerial environmental factors and foundational knowledge of basic principles of Controlled Environment Agriculture.

COURSE REQUIREMENTS

Minimal Technical Skills Needed

Students will need a computer with Internet access in order to access and use D2L. Basic knowledge of Microsoft office (Word, Excel, and PowerPoint) is required.

Instructional Methods

Lectures: This is a 100% online course administered through its course shell on D2L (myLeo) where lecture materials (PowerPoint lecture slides, book chapters, videos, and other instructive materials, and assignments) will be posted prior to class for students to download and review in advance. Discussions on specific topics related to the class will also be carried out through D2L.

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. Be on time for online discussions;
3. Active participation in online discussions on topics brought out in lecture and from outside reading assignments;
4. Completion of assignments in a timely fashion;
5. Students are expected to be courteous and respectful with others classmates thoughts or opinions during online discussions;
6. No makeup exams.

ASSESSMENTS and GRADING

Course evaluation

Student's final grade will be based on 400 points total from exams, homework assignments, and participation in discussions.

Exam 1 …….100 points
Exam 2 …….100 points
Exam 3 …….100 points
Assignments……..……100 points
Participation……..……100 points

Exams: (Multiple Choice, T/F, Matching, Short Answer, and Essay type questions): There will be three one-hour exams taken through D2L.
Homework Assignments: There will be up to 5 assignments to work on during the semester. A special assignment on nutrient solution calculation will be given to test students' skills to formulate a nutrient solution recipe.
Class Participation: Discussion board will be created in D2L for discussion (Q&A) on specific topic related to each lecture. Student's participation to these discussions along with access to course materials (time spent downloading materials and reviewing videos) will be recorded.

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 Texas A&M University-Commerce 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

The *syllabus/schedule are subject to change.*

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 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 lectures and lab activities are required. No make-up for lab and for exams

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

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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

Academic Integrity

Students at Texas A&M University-Commerce 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

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
Texas A&M University-Commerce
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

Texas A&M University-Commerce 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 Texas A&M University-Commerce 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 A&M-Commerce 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 A&M-Commerce campuses. Report violations to the University Police Department at 903-886-5868 or 9-1-1.

COURSE OUTLINE / CALENDAR

Lecture Schedule

Week	Dates	Topics, Readings, Assignments Exam	Instructor
1	June 1 – 5	Welcome – syllabus overview Hydroponic production – Basic principles, Historical Perspectives Advantages/Disadvantages,	Dr. Desire Djidonou
2	June 8 – 12	Types of Hydroponics Systems	Dr. Desire Djidonou
		Growing Substrates	
		Plant Nutrition, Nutrient Solution and System Monitoring: EC, pH,	
		Exam 1	
3	June 15 – 19	Aerial Environmental Factors and Plant Growth: Light, Temperature, CO_2, RH, Cooling Systems	Dr. Genhua Niu
		Controlled Environment Agriculture – Indoor Vertical Farming – Plant Factory	
		Organic hydroponics	
		Exam 2	
4	June 22 – 26	Hydroponics Systems in leafy greens: lettuce, herbs, and microgreens	Dr. Genhua Niu
		Hydroponics Systems in vine crops: tomatoes, pepper, cucumbers	Dr. Desire Djidonou
		Hydroponic System in strawberry	
		Emerging CEA – cannabis/hemp	
5	June 29 – July 2	Aquaponics,	Dr. Joseph Masabni
		Final exam and special project due	Dr. Desire Djidonou

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