**Online Greenhouse Management – Spring 2020**

Linn Benton Community College – Agricultural Sciences

**Course Numbers** HT8.115 CRN: 45686

**Course Credits:** 3 credits

**Meeting Time & Room:** Lecture: M 10-11:50am

Join Zoom Meeting

https://linnbenton.zoom.us/j/5419174603

 Assignments due Wednesdays

**Instructor:** Miriam Edell

edellm@linnbenton.edu 541-917-4603

**Office Hours:** Monday 12:00pm-1:00pm

Join Zoom Meeting

https://linnbenton.zoom.us/j/5419174603

**Course Description** This course introduces you to the management of greenhouses for ornamental plants, nursery stock and food production and helps you prepare for a career in a commercial greenhouse operation. We will go over background information on the greenhouse industry, greenhouse structures, growing media and conditions, IBPM (integrated biological pest management) pests and disease issues.

**Course Outcomes** 1. Compare root media and soil amendments for successful plant

 growth.

2. Differentiate greenhouse designs and construction materials.

3. Understand cultural practices for management of common pests in a

 greenhouse

4. Be able to identify common greenhouse pests and suggest

 beneficial insects to remediate problems

5. Discuss heat, light, fertility and water management for desired plant

 growth.

**Course Materials:** Required:

**Weekly readings will be posted online, with questions to answer**

Required textbook: Greenhouse Operation and Management, 6th Edition by Paul V. Nelson

Books may be available in the library for readings from the Ball Redbook Beytes and Nau; Greenhouse Operation and Management, Nelson

The course will be organized around Moodle and Zoom. You do not

 need to have a zoom account for this as I have an account and you

 have access to my materials.

Extra readings, zoom recordings and lectures are all available through

 the Moodle site.

 Please familiarize yourself with Moodle and ask for assistance if

 Needed. Contact Moodle services for additional help, Eric Bryant or

 Paul Tannahill

\*\*Optional Books:

Biodynamic Greenhouse Management by Heinz Grotzke

Your Homemade Greenhouse and How To Build It by Jack Kramer

The Commercial Greenhouse, 3rd Edition by James W. Boodley and Steven E. Newman

Ball Redbook, Vol. 1 and 2, Chris Beytes, editor, and Jim Nau, editor

**Waitlist Policy** If the class is full, registered students not attending the first session without advance notice to the instructor will be dropped from the class and students from the waitlist will take their spots. Wait-listed students must attend the first class and get instructor approval to become registered students.

**Course Evaluation** You will be evaluated based on quizzes, assignments, a final exam, and a presentation. You have to let the instructor know ahead of time (via email or personal message) if you are unable to meet the due dates of assignments or take a quiz or exam, for a legitimate reason. All assignments, quizzes and the final will be found online and submitted online.

**Grades:** The grading system for the course is “A-F”. Final grades will be based on the percentage of total points earned.

A = 90% and above - B = 80 to 89% - C = 70 to 79%

D = 60 to 69%. - F = 59% and below

Quizzes (3) 5 points each = 15 %

 Assignments (3) 5 points each = 15 %

 Weekly write-ups 1 points each = 8 %

 Textbook Questions 3 points each = 30 %

 Individual Project = 10%

 Exam = 22%

 **TOTAL = 100 %**

*Incomplete Grade:* An *Incomplete* will not be issued. Notify the instructor if you are no longer able to attend class.

*Y Grade:* If you miss more than 6 write-ups you will not receive credit for the class (“Y” grade).

*Audit Status:* Students may request *Audit* status in place of a letter grade before the end of the second week.

**Quizzes 15% of your grade**

The quizzes will be based on lecture and reading materials.

**Assignments 15% of your grade**

Assignments allow more time for deeper understanding and exploration of a subtopic within Greenhouse Management. Assignments will be posted online with due dates.

**Write-ups 8% of your grade**

Each week you are required to submit a brief, one page, write up on an article either found in the readings or one you find on your own (you must present the article) on the weekly topic.

**Textbook readings and Questions 30% of your grade**

Read the required chapters each week and answer the required questions. Turn them in online by the end of each week.

**Individual Project 10% of your grade**

Each student will do an individual project directly related to greenhouses.

You need to create a greenhouse with required features for successful plant growth,

including but not limited to: water, air circulation, light, heat, benches.

You can create it as a poster, a full drawing of your greenhouse with all the features appropriately labeled

Or you can design and build a small model of a greenhouse

Or you can build a small functional greenhouse

You will need to explicitly document the work you do (photos taken as you progress) and present this work at the end of the quarter, on a poster board or photo presentation to the entire class in a group Zoom meeting at our scheduled class time.

If you are not able to attend this meeting I will make special arrangements for you.

See ‘Individual project’ in Moodle for additional details.

**Exam 22% of your grade** The exam will be comprehensive covering all material from the class; including lectures, and readings. A study guide is provided in Moodle, week 9.

**Student Integrity:** Students have access to the textbook and lectures for quizzes and the final.

**Disabilities Services**

\*\*\*Meet with instructor during week one\*\*\* If you have emergency medical information for your instructor, need special arrangements to evacuate campus, or have a documented disability, please meet with your instructor, by appointment, no later than the first week of the term, to discuss your needs and present your ODS accommodation letter. If you have a documented disability that will impact you at college and you have yet to seek accommodations, contact the Center for Accessibility Resources (CFAR) for intake and to document your disability with LBCC. Only students who document a disability and present an accommodation letter to an instructor are entitled to academic accommodation.

Each term, when you register for classes and at least 2-3 weeks prior to the start of a term, submit your “Request for Accommodations” form to CFAR. Week 1, pick up letters for your instructors and deliver in person to each instructor during office hours or by appointment. Instructors may need time to arrange your accommodations. CFAR may be reached from any LBCC campus/center by email to or by calling 917-4789. Letter pickup is available at each LBCC campus/center.” Additional instructional services, beyond classroom instruction and instructor consultations, are available for all students at the Learning Center and The Support Lab at HO-114.

**Classroom Guidelines**

* Please attend our zoom lectures at the class time, Mondays from 10-11:50am if possible by going to the Zoom Room link. This will allow for real time questions and answers. If you are not able to attend in real time I will have recorded sessions posted as a Zoom link.
* During this most unusual time in history, be patient and kind as emotions run high as we all deal with stress in our unique ways.

**Tentative Course Schedule**

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| **Week** | **Monday** | **Wednesday** | **Readings and Assignments** |
| 1  | **Course Overview****GH Industry Overview** | **Chapter 1, Reading and Questions****Assignment 1, Due in class** | **Read one article and do a brief write up of the article.****Read the assigned chapter of the text and answer questions.** |
| 2 | **Structures and Materials Lecture**Read about Individual Project email any questions you might have | **Chapter 2, Reading and Questions****Greenhouse Design and Structure Video** | <http://aggie-horticulture.tamu.edu/ornamental/greenhouse-management/greenhouse-structures/> Extra: <http://www.wvu.edu/~agexten/hortcult/greenhou/building.htm> <http://msue.anr.msu.edu/news/analyzing_and_improving_your_farms_air_drainage>  |
|  3  | **Quiz 1****Media and Containers Lecture** | **Chapter 6, Reading and Questions****Assignment 1, Due Friday, April 24.**[**Making Sowing Mix**](https://docs.google.com/document/d/1eUyHcJVLGM0mhiOeNbAqdhKPfa0RJ8Hk21lMRrc4iyY/edit) | <http://www.uaex.edu/Other_Areas/publications/PDF/FSA-6098.pdf> <https://attra.ncat.org/attra-pub/viewhtml.php?id=47> [ATTRA - Plug and Transplants for Organics](https://attra.ncat.org/attra-pub/download.php?id=55)  |
| 4  | **Light Lecture****Hand out: Assignment 2** | **Chapter 12, Reading and questions**Controlling Photoperiod;Reading and Discussion | <http://www.greenhousegrower.com/article/21635/which-watering-method-is-best> Extra <http://www.ledsgrowinggreen.com/>  |
| 5  | **Temperature Lecture****Assignment 2 Due****Handout Assignment 3** | **Chapter 12****Reading and questions** | <http://edis.ifas.ufl.edu/ae030><https://attra.ncat.org/attra-pub/viewhtml.php?id=59>[ATTRA – Compost Heated Greenhouses](https://attra.ncat.org/attra-pub/viewhtml.php?id=57)  |
| 6  |  **Water Lecture****Assignment 3 Due** | **Chapter 8****Reading and Questions**   |  |
| 7  | **Quiz #2** **Fertilizers Lecture** | **Chapter 9****Reading and Questions** | <http://www.gpnmag.com/grower-101-nutrient-disorders-greenhouse-crops> <http://www.gpnmag.com/grower-101-nutrient-disorders-greenhouse-crops-part-ii><http://www.agronext.iastate.edu/soilfertility/photos/photossdef.html> Extra Organic Fertilizer Sources <https://attra.ncat.org/attra-pub/org_fert/>  |
| 8  | **Pests and Diseases****Lecture** | **Chapter 14 pg 463-490****Reading and Questions****Chapter 15, pgs 537- 575****(minus Table 15-1, pgs 546-564)**   | ATTRA – Greenhouse IPM Extra ATTRA - White fly control ATTRA – Aphid IPMATTRA - Thrips IPM<https://attra.ncat.org/horticultural.html#Greenhouse>  |
| 9  | **Business Management****Quiz 3** | **Student Presentations** **Zoom presentations 10-11:50am**  | [Transitioning to Organic Production](https://nifa.usda.gov/funding-opportunity/organic-transitions-org)USDA census [QuickStats](https://quickstats.nass.usda.gov/)   |
| 10  | **Final** |  |   |