

**SYLLABUS**  
**HORT 202**  
**HORTICULTURE SCIENCE AND PRACTICES LABORATORY**  
**FALL2020**

David Wm. Reed, Lab Coordinator

Day	Section	Time	Graduate Teaching Assistant
Monday	501	2:00 - 4:50	Emily Boak
Tuesday	502	12:45 - 3:35	Kaitlin Hopkins
Wednesday	503	1:35-4:25	Tessa Hochhaus
Wednesday	504	5:00 – 7:50	Emily Boak
Thursday	505	12:45 – 3:35	Tessa Hochhaus

**Location:** Horticulture Forest Science Building (HFSB) 112

**Prerequisite:** HORT 201 or registration therein.

**Required Text**

General Horticulture Laboratory Manual; Second Edition; David Wm. Reed  
 ISBN 0-8087-9470-1

**Learning Outcomes**

Horticultural Science and Practices Lab is designed to provide a broad understanding of horticulture through basic and applied science. This is achieved through weekly quizzes over concepts, applied laboratory Experiments that emphasize teamwork in creating and interpreting qualitative and quantitative data and synthesis of underlying concepts in group discussion, observation, and discussion of specimens and technique on field trips, and individually prepared written an in-depth analysis of team-collected experimental results.

- Botany
  - Learn scientific terminology to describe plant anatomy and morphology
  - Understand the taxonomic relationships of plants
  - Apply Keys to identify plants.
- Plant Physiology, Growth, and Development
  - Apply practical means to manipulate the plant physiology and growth for practical purposes
  - Recognize that chemical growth regulators illustrate the junction of plant biochemistry, plant form and shape and economic impacts on horticultural crops.
  - Define plant essential elements and understand their use as fertilizers.
  - Recognize fertilizer application as a means of stimulating plant growth.
- Soil Science
  - Understand a working knowledge of the physical and chemical properties of soils.
  - Related soil conservation with the use of sustainable materials for horticultural production.
  - Learn how to make and use artificial soils.
- Entomology
  - Understand the entomology of horticultural crops.
  - Identify the most common horticultural pests.
- Horticulture Principles
  - Understand the principles of asexual and sexual plant propagation techniques.
  - Learn the methods and techniques of sexual and asexual plant propagation.
  - Understanding of the care of landscape plant materials.
  - Become proficient in basic horticultural mathematical calculations.

**Core Objectives for Life and Physical Science**

The Core Objectives will be achieved by the following actions and approaches taken in the lab.

1) **Critical Thinking:**

- Analysis of empirical experiments
- Probing questions in lab report and weekly quizzes

2) **Communication:**

- Team oral and visual reports and facilitating group discussions related to analysis of experiments.
  - Written laboratory reports.
- 3) **Empirical & Quantitative Skills:**
- Calculations of data in lab reports
  - Calculations of dosage rates from label directions on commercial chemical and hormones used
  - Fertilizer calculations.
- 4) **Team Work:**
- Teams will set-up and collect data on empirical experiments.
  - Teams will lead the discussion on the experimental results

#### Instructors: Graduate Teaching Assistants

<b>Emily Boak</b>	<b>Tessa Hochhaus</b>	<b>Kaitlin Hopkins</b>
Office: HFSB 414 boakn009@tamu.edu	Office: HFSB 514 hochhaust@tamu.edu	Office: HFSB 528 hopkinska@tamu.edu

#### Office Hours

Each instructor will inform the students of his/her office hours. Office hours will be via Zoom.

#### Attendance and Make-up Labs

- The lab is 100% experiential learning through experiments, demonstrations and short field trips. Most of the experiences are presented live as one-time occurrence.
- Attendance is mandatory. You must attend each lab in its entirety either face-to-face or remotely via Zoom. Late arrival (after the quiz is over) and/or early departure (before the entire class is dismissed) will result in an unexcused absence, and a grade of zero will be given to that week's weekly quiz.
- Missed labs due to an excused absence (defined in the Student Rules (see <http://student-rules.tamu.edu/rule7.htm>):
  - Make-up the lab by attending another lab section that week. You must seek permission from the instructor of your lab section and the instructor of the lab section you wish to attend.
- Missed labs due to a non-excused absence:
  - With permission due to certain extenuating circumstances, you may contact your TA and request to miss your lab section and attend another lab section that week. Again, permission must be granted by both TAs.
- Why must all make-ups be the same week? Each lab is a one-time experiment, demonstration or field trip. Thus, once that week passes, there is no opportunity for make-up.
- If the missed lab cannot be made up **during that week**, your quiz grade for that week will be a 0. (but can be used as a drop grade)
- You may only miss a maximum of 3 labs, excused or not (not counting week 1 during the drop/add period). If you miss 4 or more labs (that are not made-up by attending another lab that week), you will receive a grade of "I" (incomplete) and must attend the labs the next semester to make-up the labs.
- If you miss half or greater than the total number of labs, you will receive a grade of "F" (Fail); unless the absences are for University accepted excuses.

#### Grading Weight

Weekly quiz grades = 50%  
Lab report = 50%

#### Grading Scale

A = 90-100, B = 80-89, C = 70-79, D = 60-69, F ≤ 59

However, the grading scale may be adjusted lower to normalize clustering of letter grades between lab sections.

#### Weekly Quizzes:

**Students MUST bring a laptop/tablet to class that can connect to the internet and access eCampus. This is how**

**every weekly quiz will be administered. No laptop/tablet=No ability to take the quiz.**

Weekly quizzes are given every lab. You will take up to 13 weekly quizzes. You are allowed to drop your 2-3 lowest grades. Your quiz grade will be based on your 10 highest quiz grades. Grades of 0 for missing a week's lab can be used as a drop grade. Each quiz will be worth 10 points; 8 points of each quiz will be based on the previous week's lab material and 2 points of each quiz will be based on general information the current week's lab material. **Therefore, you are required to read each week's lab material BEFORE coming to class.**

Each quiz will be administered through eCampus and proctored via Zoom. Each quiz is 10 minutes long and starts 5 minutes after the start of class time. If you arrive to class or join Zoom while a quiz is in progress, you may take the quiz, but you must complete the quiz by the standard completion time (i.e., you will not be given an extension). If you arrive after the quiz has been completed and taken-up, you will receive a grade of 0 for that quiz. Any student departing from the lab or Zoom early will have his/her quiz invalidated (a grade of 0) and will be considered absent for that lab. In other words, you must attend the entire lab period for your quiz to count; unless permission is granted by the instructor.

**Lab Report:**

- We will be conducting a series of lab Experiments throughout the semester. Most Experiments will produce data. Your lab report grade will be based on **data** collected and **questions** answered about each Experiment. **Data** will be collected as a group and shared in class. If you are absent, you are responsible for obtaining missing **data** from the instructor.
- As teams and as a group, the class will collect data, observe the plants and discuss the results and what it means.
- However, the answers to **questions** in your lab report must be your own and cannot be the result of discussion with others after the lab is over. You must work by yourself in interpreting the data and your notes from the class discussion to answering the questions. Any duplicated/plagiarized answers that are found between lab reports will be considered academic misconduct. If it is determined that you worked with others in developing answers, this will be handled as academic misconduct and you will receive a grade of F in the course (see <http://www.tamu.edu/aggiehonor>).
- You may approach your instructor to discuss any aspect of the lab.
- Lab reports will be due as experiments are finished and as announced by the instructor. These will occur throughout the semester; however, a large number of reports will occur towards the end of the semester. Your lab instructor will remind you of the exact dates during the semester. **For lab reports turned in after the due date, the grade for that report will be reduced by 10% per day late.**

**Lab Schedule**

Calendar Week	Laboratories
Week 1	<b>Lab 1 Orientation</b> <ul style="list-style-type: none"> <li>• Syllabus, Lab Safety and Laboratory Structure</li> </ul>
Week 2	<b>Lab 2 Plant Morphology and Plant Structure</b> <ul style="list-style-type: none"> <li>• Demonstration - Types roots, stems, leaves and fruits</li> </ul>
Week 3	<b>Lab 3 Plant Identification &amp; Taxonomy</b> <ul style="list-style-type: none"> <li>• Scientific nomenclature</li> <li>• Demonstration - How to use and construct a Key</li> </ul>
Week 4	<b>Lab 4 Temperature</b> <ul style="list-style-type: none"> <li>• Experiment 4-1 - Stratification of Seeds to Stimulate Germination</li> <li>• Experiment 4-2 - Chilling Injury to Tropical Foliage Plants or Fruits</li> <li>• Experiment 4-3 - Chilling Injury to Germinating Temperate Plant Seeds</li> <li>• Experiment 4-4 - Cold Treatment (Storage) for Forcing Flowering Bulbs</li> <li>• Experiment 4-5 - Vernalization for Flowering (Bolting) of Biennials</li> </ul>
Week 5	<b>Lab 5 Light</b> <ul style="list-style-type: none"> <li>• Experiment 5-1 - Responses of Horticultural Plants to Photoperiod (Day Length)</li> <li>• Experiment 5-2 - Response (Growth) of Plants to Various Light Intensities</li> </ul>

	<ul style="list-style-type: none"> <li>• Experiment 5-3 - Acclimatization of Foliage Plants to Low (Indoor) Light Intensities</li> <li>• Experiment 5-4 - Response of Plants to Light Quality &amp; Artificial Light Sources</li> </ul>
Week 6	<b>Lab 6 Growth Control</b> <ul style="list-style-type: none"> <li>• Experiment 6-1 - Chemical Height Control</li> <li>• Experiment 6-2 - Physical and Chemical Pinching</li> </ul>
Week 7	<b>Lab 7 Growing Media &amp; Soils</b> <ul style="list-style-type: none"> <li>• Demonstration 7-1- Determination of Soil Texture</li> <li>• Demonstration 7-2 - Identification and Properties of Growing Medium Amendments</li> <li>• Demonstration 7-3 – Popular Growing Medium Mixes</li> <li>• Experiment 7-4 - Growth Responses to Various Growing Media</li> </ul>
Week 8	<b>Lab 8 Asexual Propagation</b> <ul style="list-style-type: none"> <li>• Demonstration 8-1 - Propagation by Cuttings</li> <li>• Experiment 8-2 - Effect of "Rooting Hormones" (Auxins) on rooting cuttings</li> <li>• Demonstration 8-3 - Propagation by Layering</li> <li>• Demonstration 8-4 - Propagation by Grafting and Budding</li> <li>• Demonstration 8-5 - Propagation by Division</li> </ul>
Week 9	<b>Lab 9 Sexual Propagation</b> <ul style="list-style-type: none"> <li>• Demonstration 9-1 - Seed Parts and Type Germination</li> <li>• Demonstration 9-2 - Seed Storage and Germination Environment</li> <li>• Demonstration 9-3 - Germination (Seeding) Media and Containers</li> <li>• Demonstration 9-4 - Seed Sowing and Transplanting</li> <li>• Experiment 9-5 - Scarification to overcome hardseededness seed dormancy</li> </ul>
Week 10	<b>Lab 10 Nutrition &amp; Fertilizers</b> <ul style="list-style-type: none"> <li>• Demonstration 10-1 - Essential Elements (Nutrients) and Fertilizers</li> <li>• Demonstration 10-2 - Fertilizer Programs and Applicators</li> <li>• Demonstration 10-3 - Preparing Fertilizer Solutions</li> <li>• Demonstration 10-4 - Recognition of Nutrient Deficiency Symptoms</li> <li>• Experiment 10-5 - Effect of Rate of Fertilizer Application on Plant Growth</li> </ul>
Week 11	<b>Lab 11 Pest Identification &amp; Control</b> <ul style="list-style-type: none"> <li>• Demonstration 11-1 - Pest Control</li> <li>• Demonstration 11-2 - Insects, Mites, Nematodes, Slugs and Snails</li> <li>• Demonstration 11-3 - Disease-Causing Pests</li> </ul>
Week 12	<b>Lab 12 Pruning, Bracing, Cabling in the Landscape (field trip)</b> <ul style="list-style-type: none"> <li>• Demonstration 12-1 Pruning</li> <li>• Demonstration 12-2 Bracing and Cabling</li> <li>• Demonstration 12-3 Staking and Guying</li> </ul>
Week 13	<b>Lab 13 Tours to see in practice examples of many topics covered</b> <ul style="list-style-type: none"> <li>• Leach Gardens</li> <li>• HorTREC Field and Greenhouse Facility</li> <li>• Turf plots</li> </ul>
Week 14	All remaining Lab Reports due by Friday before dead week

### **Hazardous Materials Statement**

Do not perform any procedure until all risks are understood and all actions can be performed in a safe, informed manner. When in doubt, ask your instructor for help

- Hazards in the Hort 202 laboratory include:
  - Chemicals
    - fertilizer solutions (Lab 10)
    - plant growth regulators (Lab 6)
    - rooting compounds (Lab 8)
    - cleaning solutions (Lab 9)
    - concentrated sulfuric acid (Lab 9)
    - Chemicals will be handled with gloves, and with protective clothing when appropriate. Students will be strictly monitored. Any improper exposure to these chemicals should be reported to the instructor immediately.
  - Air-borne Irritants (Labs 4-10)
    - perlite
    - vermiculite
    - Particulate masks will be issued to students when appropriate. Students with respiratory problems may be exempt from primary contact with these components with a doctor's excuse, or by permission of the instructor.
  - Mechanical Hazards (Lab 8 & 9)
    - The use of sharp instruments in the lab is required, and students should exercise caution. The best way to avoid injury is to proceed slowly and follow instructions.

### **Copyrights**

Please note that all handouts and supplements used in this course are copyrighted. This includes all materials generated for this class, including but not limited to syllabi, exams, in-class materials, review sheets, and lecture outlines. Materials may be downloaded or photocopied for personal use only, and may not be given or sold to other individuals.

### **Americans with Disabilities Act (ADA) Policy 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 believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information, visit <http://disability.tamu.edu>.

### **Academic Integrity Statement and Policy**

No form of academic misconduct will be tolerated in HORT 202 lab. Be aware that copying answers during lab quizzes, any copied or plagiarized answers, or any answers developed in discussion with others in lab reports are forms of academic misconduct. Please refer to Student Rules (<http://student-rules.tamu.edu/>) and the Honor Council Rules and Procedures (<http://aggiehonor.tamu.edu/Students/>). It is the student's duty to read, understand and comply with these policies.

*"An Aggie does not lie, cheat or steal, or tolerate those who do."*