

HORT 150: Science and Art of Growing Plants

Spring 2015 Syllabus

Instructor

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Catalog Description

Hort 150 [BSCI] Science and art of growing plants 4 (3-3) Understand and apply the science behind how plants grow and the art of growing plants for personal and commercial use.

Lecture: MWF 10:10 – 11:00 am in Vogel PBS, room 43

Lab: Mon 1:10 – 4:00 pm in Vogel PBS, room 43

Prerequisite: None.

Required Text: Levetin, Estelle, and Karen McMahon. Plants and Society. 2012. Sixth edition. Available for purchase at the Bookie.

Course Delivery Methods

During the scheduled class time, this course material will be delivered in lectures, laboratory activities, class discussion, group work, and on-campus field trips.

Course Objectives

To introduce you to horticultural concepts, allowing you to experience the science and art of growing plants as you apply basic horticultural knowledge to the production of plants utilizing controlled environments for personal or commercial use.

To provide you with personal, hands-on experiences in the biological sciences that will guide you through the processes of generating, evaluating, disseminating, and applying the scientific method in ways that you may use throughout your life.

To challenge any pre-existing assumptions you may have and promote a reasoned consideration and evaluation of different production practices, including “conventional,” “organic,” and “sustainable”, exploring the truth behind statements in the popular press.

Student Learning Goals, Outcomes, and Assessments

Learning Goal	At the end of the course, you should be able to:	Topics to advance the learning goal:	Evaluated primarily by:
Scientific literacy	<ul style="list-style-type: none"> explain how scientific research has advanced knowledge about growing plants recognize competing societal benefits and risks associated with conventional, sustainable, and organic horticulture and defend your opinions with factual information 	Instruction and discussions related to this goal are integrated throughout all lectures and labs. Topics that deal with this directly include: <i>Scientific method</i> , <i>Plant growth factors</i> , <i>Sustainable horticulture</i> , and <i>Organic horticulture</i> .	<p>Exams</p> <p>Assignments on Journal article review and Science reporting</p> <p>Research project and paper</p> <p>Class discussion</p>
Critical and creative thinking	<ul style="list-style-type: none"> ask relevant questions regarding the scientific basis behind information you receive about plants explore and analyze the scientific accuracy behind media stories on plant growth 	Instruction and discussions related to this goal are integrated throughout all lectures and labs. Topics that deal with this directly include: <i>Evaluating information</i> and <i>Basics of life</i>	<p>Exams</p> <p>Assignments on Journal article review and Science reporting</p> <p>Research project and paper</p> <p>Class discussion</p>
Quantitative reasoning	<ul style="list-style-type: none"> organize and use data related to bedding plant seedling production 	Instruction related to this goal is integrated in various lectures and labs, including: <i>Reproduction of plants</i> .	<p>Exams</p> <p>Crop scheduling exercise</p> <p>Research project and paper</p>
Information literacy	<ul style="list-style-type: none"> find and assess the scientific value of information on growing a range of horticultural commodities 	Instruction related to this goal is integrated in many lectures and labs, particularly in: <i>Finding and evaluating information</i>	<p>Assignments on Library orientation, Journal article review, and Science reporting</p> <p>Research project and paper</p>
Communication skills	<ul style="list-style-type: none"> write accurately on topics related the role of plants in today's society 	This is demonstrated in reading materials, practiced in assignments, and discussed in topics including: <i>Applications of plants in society</i>	<p>Exams</p> <p>Assignments on Journal article review and Science reporting</p> <p>Research project and paper</p>

Course Topics

- Plants and their role in society and the environment
- Finding and evaluating information on plant growing and production systems
- Understanding the use of science and the scientific method to advance the understanding of plant production
- Basics of life (overview of introductory botany that must be understood to evaluate plant production systems):
 - Plant structure and function
 - Plant growth and development
 - Photosynthesis, respiration, and transpiration
- Plant growth factors, including light, water, temperature, fertilizers, and soils
- Sexual and asexual reproduction of plants
- Applications of plants in society, based on research findings:
 - Sustainable horticulture
 - Organic gardening
 - Fruit and vegetable production
 - Growing plants in controlled environments

Weekly Class and Lab Schedule

Week 1	Plants and society. Finding and evaluating information.
Lab	Library orientation, Owen Science Library.
Week 2	Scientific method.
Lab	Holiday, Martin Luther King, Jr. Day.
Week 3	Plant life basics.
Lab	Park's Seed Catalog crop scheduling activity.
Week 4	Plant structure and function.
Lab	Plan treatments for germination research project. Prepare materials and seeds of 21 flowering annuals and perennials for experiments.
Week 5	Plant growth and development.
Lab	Plant germination experiments at Greenhouse 118. Develop predictions for results of the experiments.
Week 6	Plant reproduction. Exam I.
Lab	President's day, no class

Week 7	Plant reproduction.
Lab	Collect data and record observations on germination experiments. Vegetative propagation activity. Analyze preliminary results.
Week 8	Photosynthesis, respiration, and transpiration.
Lab	Collect data and record observations. Begin transplanting from germination flats into cell pack flats. Discuss results.
Week 9	Light and temperature.
Lab	Collect data and record observations. Transplant to cell packs. Design and construct terrariums. Explain how photosynthesis, respiration, and transpiration are involved in maintaining your miniature plant world.
Week 10	Water and fertilizers.
Lab	Collect final data. Transplant seedlings to 3½" pots. Transplant rooted cuttings from vegetative propagation activity.
Week 11	Soils.
Lab	Soil and growing media property activities and demonstrations.
Week 12	Fruit and vegetable production.
Lab	Fruit tree pruning techniques. Tour of WSU Compost Facility.
Week 13	Ecology and Composting. Exam II.
Lab	Post-harvest design, construction, and use of floral products.
Week 14	Sustainable horticulture.
Lab	Final transplanting of germination experiment flowers into 3½" pots. Discussion of final results.
Week 15	Organic gardening.
Lab	Tour Horticulture's, Tukey orchard.
Finals Week	Final Exam.

Grades and Grade Policies

Grades will be based on total accumulated points throughout the semester from:

- 1) Class participation and attendance.** Punctual attendance and active participation are expected for all class and lab meetings. Participation includes class quizzes. 50 points
- 2) Three hourly exams** (each will be comprehensive).
 - Exam I.** 150 points
 - Exam II.** 150 points
 - Final Exam.** 120 points
- 3) Written assignments.** 75 points
- 4) Research project and paper.** 80 points

Hourly exams and quizzes cannot be made up if missed. Papers and assignments are due at the beginning of class on the designated date. A grade penalty of 10% per day will be applied for each day the project is late. Your final grade will be based on total number of points accumulated from all sources during the semester. The grading scale is:

100-93%	A	77-79%	C+
90-92%	A-	73-76%	C
87-89%	B+	70-72%	C-
83-86%	B	65-69%	D+
80-82%	B-	60-64%	D
		<62	F

Grades can be calculated during the semester by dividing points earned by total possible points and comparing to the grade scale listed above.

Written Assignments and Due Dates

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| • Library Assignment | Due | January 23 | 10 Pts |
| • Crop Scheduling Exercise | | February 2 | 15 Pts |
| • Journal Article Review (also a draft for your Science Reporting Assignment) | | March 11 | 50 Pts |
| • Science Reporting Assignment | | March 27 | 20 Pts |

Throughout the semester, you will be conducting experiments on seed germination during lab. At the start of the semester, the class will decide on appropriate treatments for the experiments. You will work in groups of three to conduct the experiments and grow the plants. Each week, your group will collect growth data, and you will make observations on your experiments. Your observations should be discussed with your group mates and the class, but you will each make independent observations.

At the end of the experiment, you will prepare a written paper on your experiment. The paper will be in the form of a scientific research paper, with an Introduction, Materials and Methods, Results, Discussion, Conclusions, and Literature Cited. You will become familiar with this format in various class activities throughout the semester. The Materials and Methods section and the Results section may be the same for each member of a group, but the Introduction, Discussion, Conclusion, and Literature Cited sections of the paper will be written independently by each student.

Further details on this assignment, including a grading matrix, will be distributed after the class determines the particular treatments to be tested this semester.

Plagiarism (WAC 504-25-310)

Plagiarism is knowingly representing the work of another as one's own, without proper acknowledgment of the source. The only exceptions to the requirement that sources be acknowledged occur when the information, ideas, etc., are common knowledge. Plagiarism includes, but is not limited to, submitting as one's own work the work of a "ghost writer" or work obtained from a commercial writing service; quoting directly or paraphrasing closely from a source without giving proper credit; using figures, graphs, charts, or other such material without identifying the sources.

Cheating (WAC 504-25-310)

Cheating is the intentional use of, or attempt to use, unauthorized material, information, or study aids in any academic activity to gain advantage. Cheating includes, but is not limited to, communicating improperly with others, especially other students, during tests or the preparation of assignments for classes; copying from books, notes, or other sources during a test when this is not permitted; copying from another student's work (reports, laboratory work, computer programs, files, etc.); making improper use of calculators or other devices during a test; illegitimately procuring or using copies of current examinations; allowing a substitute to take an examination or write a paper for oneself.

Academic Integrity Processes (WAC 504-25-315)

Every act of academic dishonesty affects academic evaluation of the student and also is a violation of the University's standards of conduct. Responsible instructors retain the authority and responsibility to assign grades to students, considering from an academic standpoint the nature of the student's action. This is the case even when the case is referred to the University Academic Integrity Process. Students have recourse to appealing the responsible instructor's assignment of grades according to usual academic policy. See Academic Regulation 104.

All clear instances of academic dishonesty shall be reported to the Office of Student Conduct as outlined in 504-35-335(2). The first reported instance at WSU of academic dishonesty by a student will be treated as purely an academic matter unless, in the judgment of the responsible instructor, more serious action should be taken through the disciplinary process. Any allegation of subsequent academic dishonesty will be treated as a matter to be referred to the Office of Student Conduct.

Reports of Academic Dishonesty (WAC 504-35-320)

Any member of the University community who witnesses an apparent act of academic dishonesty shall report the act either to the instructor responsible for the course or activity or to the Office of Student Conduct.

Reasonable Accommodation Statement

I am committed to providing assistance to help you be successful in this course. Reasonable accommodations are available for students with a documented disability. Please go to the Disability Resource Center (DRC) during the first two weeks of the semester to seek information or to qualify for accommodations. All accommodations MUST be approved through the DRC, located in the Administration Annex Bldg, Room 205. To make an appointment with a disability counselor, please call 335-3417.

WSU Safety Procedures

Washington State University is committed to maintaining a safe environment for its faculty, staff, and students. Safety is the responsibility of every member of the campus community and individuals should know the appropriate actions to take when an emergency arises. Please, go to:

WSU Pullman Campus Safety Plan: <http://safetyplan.wsu.edu>

WSU Emergency Management: <http://oem.wsu.edu/emergencies>