

HRT 204 – Plant Propagation

Spring Semester 2012

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CLASS SCHEDULE

Lecture:	MW	10:20-11:10	A149 PSSB
Lab:	Th	10:20-12:10	B109 PSSB
	Th	12:40-2:30	B109 PSSB

COURSE DESCRIPTION

Asexual (rooting of cuttings, micropropagation, budding and grafting, layering, underground structures) and sexual (seed germination, storage, production) propagation. Class meets first ten weeks of semester.

TEXTBOOKS AND LECTURE NOTES

1. *Plant Propagation: Principles and Practices* (8th edition) by Hartmann, Kester, Davies, and Geneve. 2011. Prentice Hall, Upper Saddle River, NJ.
2. Lecture notes are available on the web at: <http://angel.msu.edu> under Lessons.
3. HRT 204 Laboratory Course Pack (Available at Spartan Bookstore in the International Center)

COURSE OBJECTIVES

1. Provide a theoretical and practical understanding of asexual and sexual propagation techniques.
2. Hands-on experience in propagation techniques such as rooting of cuttings, micropropagation, grafting, layering, seed scarification and stratification, temperature and seed moisture effects, and priming and pregermination.

GRADING

Midterm exam	25%	90-100	4.0
Quizzes	18%	85-89	3.5
Review article (trade journal)	3%	80-84	3.0
Review article (scientific journal)	3%	75-79	2.5
Oral presentation	4%	70-74	2.0
Lab report on herbaceous cuttings	4%	65-69	1.5
Plant Maintenance	4%	60-64	1.0
Lab attendance and participation	4%	<60	0.0
Final exam	35%		

Lecture Schedule

<u>Week of</u>		<u>Reading assignments (Chapter)</u>
Jan 9	Introduction, Asexual Propagation, Genetic Variation Rooting of cuttings	1-3, 16 9-10
Jan 16	No class (Martin Luther King Day) Micropropagation (Kristin Getter)	17-18
Jan 23	Rooting of cuttings Review of trade journal article due Jan 25	
Jan 30	Rooting of cuttings Review of scientific journal article due Feb 1	
Feb 6	Grafting	11-13
Feb 13	Grafting EXAM (Wednesday, February 15)	
Feb 20	Layering Underground structures (Bulbs, tubers, and corms)	14 15
Feb 27	Commercial seed industry	4-8
Mar 5-9	Spring Break	
Mar 12	Seed storage and quality Seed germination, requirements, dormancy	
Mar 19	Seedling production systems, Plant patents and trademarks FINAL EXAM (Wednesday, March 21)	

Laboratory Schedule

Week	Date	Topic
1	Jan 12	Introduction, Orientation to greenhouse Propagation media components and environmental conditions Hardwood Cuttings (grapes): Exercises 2.1, 2.2, 2.3 (p.3-6)
2	Jan 19	Mid-American Trade Show, Chicago
3	Jan 26	Herbaceous Cuttings (mums): Exercises 3.1, 3.2, 3.3 (p. 7-14) Cutting propagation of student's choice: Exercise 8.1 (p. 50) Priming and Pregermination: Exercise 7.3 (p. 46-47) Seed Moisture Effects: Exercise 7.4 (p. 48-49)

4	Feb 2	Micropropagation: Exercises 5.1, 5.2 (p. 17-21) Seed propagation of student's choice: Exercise 8.1 (p. 50) Air Layering: Exercise 4.1 (p. 15-16) Data collection regarding priming and pregermination Data collection regarding seed moisture effects
5	Feb 9	Scarification: Exercise 7.1 (p. 41-42) Evaluate herbaceous cuttings (mums) Evaluation of priming and pregermination Evaluation of seed moisture effects
6	Feb 16	Grafting: Exercises 6.1, 6.2, 6.3, 6.4 (p. 22-38) Data collection regarding micropropagation Data collection regarding scarification for germination Laboratory report due regarding herbaceous cuttings: Exercises 3.2 and 3.3
7	Feb 23	Check grafts Data collection regarding scarification for germination Student oral presentations
8	Mar 1	Evaluate micropropagation Evaluation of scarification Check grafts Student oral presentations
	Mar 8	Spring Break
9	Mar 15	Evaluate hardwood cuttings (grapes) Check grafts Review of lab experiments
10	Mar 22	Final Exam on Wednesday, March 21 No lab

Quizzes

There will be several unannounced short quizzes given in lecture or lab over the course of the semester. There will be no makeups, but you will be able to drop your lowest two scores.

Article Reviews

Objectives:

1. To become aware of some of the trade magazines and newspapers or scientific publications related to propagation or production of horticultural crops.
2. To learn who the publisher of these journals is, where the journals are published and the subscription costs.
3. To help students get into the habit of reading these trade publications or scientific journals on a regular basis.
4. To have students think and analyze what they read in these publications.

Directions:

1. Each student will choose two articles related to horticulture. The first will be from a trade magazine and the second will be from a scientific journal. (One source of publications is the Reading Room in A261 PSSB).
2. For each article cite the author(s), year, title of the article, name of journal, volume of journal, and page numbers.
3. For each article reflect on what is said and write about your reaction. Please do not summarize the article. Some things you might consider are: What did you like about it? Do you agree with the author? Why or why not? What would you like to know more about the subject? How might you use this information in the future? How might the article have been written differently to be more effective? Think critically about what you have read and discuss your reactions to the article. Review length should be two to three pages (double spaced - typed).

Oral Presentation

You will make a four minute oral presentation during lab on how to propagate your chosen species. Content of the presentation may include descriptions of varieties or cultivars, sources of seeds or vegetative propagules, propagation methods (means used for vegetative propagation, optimal conditions for germinating seed, etc.), cultural practices, and disease and insect problems.

Grading will be based on the attributes in the following table. You will be graded by your classmates as well as by the instructor and teaching assistant.

Attribute	Grade	Comments
Introduction/Content/Conclusion Organization		
Voice quality/Delivery/Visual aids Enthusiasm		
Eye contact		
Um meter		
Time use		
Total		

Laboratory Report on Herbaceous Cuttings

The write-up for the experiment on herbaceous cuttings (Exercises 3.2 and 3.3) will be written as a scientific laboratory report. This will include objectives, materials and methods, results (data sheets and computer generated graphs), and conclusions. Requirements and a sample report are included in you lab manual (pages iv-ix). Further explanation will be provided in class.

Plant Maintenance

Each student will have some assigned greenhouse bench space to grow and maintain your plants throughout the semester. Your allocated bench space will be located in either in C101 or C106. You are responsible for keeping these plants watered during the week and on weekends (The greenhouse staff will take care of watering over Spring Break). The instructor will periodically evaluate your crop on numerous occasions during the semester. You will be graded accordingly. Plants may be taken home at the end of the ten weeks.

Lab Attendance and Participation

Students are expected to attend lab on time and participate. Attendance will be recorded.

Lab Partners

You may work with a lab partner to complete lab exercises, share in watering duties, etc. However, assignments are individual and each student is responsible for handing in their own work.

Late Assignment Policy

All assignments are due in class on the assigned due date. Late assignments will be accepted for up to one week, but will be penalized for not being on time. Assignments over one week late will not be accepted unless the student makes arrangements with the instructor beforehand.

Course Evaluations

The Student Instructional Rating System (SIRS) provides an opportunity for students to evaluate the instruction they receive in relation to (1) the provisions of the Code of Teaching Responsibility, and (2) the various instructional models in operation at Michigan State University. The purpose of this system is to gather student input toward assessing and improving course design and teaching performance. Feedback is anonymous, and the results of these surveys are made available to the instructor and to persons involved in personnel decisions, but are not made public.

The Department of Horticulture has elected to use **SIRS Online** questionnaires to collect student feedback on instructor performance and course design/content. Students will be notified by email when the SIRS Online system opens (and closes) for feedback on these classes, and how to access the website. As a reminder, and an encouragement, to fill out the SIRS Online evaluation form, the final grade for all courses participating in SIRS Online will not be accessible to individual students during the week following the submission of grades ... unless he/she has completed the SIRS Online form.

Note that there is an option in the SIRS Online form to decline to participate in the evaluation of the course – this is equivalent to completing the form for the purpose of accessing your grade – we hope, however that you and your fellow students are willing to provide frank and constructive feedback so that information can be used to provide even better instruction in the future.