



Syllabus

PLS 5222C, Advanced Plant Propagation

Fall 2022, 3 credits

(includes 2 credits online lecture and 1 credit in person lab)

Instructors		Teaching Assistants	
Dr. Sandra Wilson Professor, Gainesville (772) 834-7619 sbwilson@ufl.edu	Dr. Mack Thetford Assoc. Professor Milton (850) 983-7130 thetford@ufl.edu	Julian Ginori Ph.D. student Apopka (786) 390-6667 Julian08@ufl.edu	Alexander Schaller Ph.D. student Balm (813) 419-6573 aschaller@ufl.edu
LAB INSTRUCTORS AND LOCATIONS: Dr. Mack Thetford (West Florida REC, Milton); Erin Alvarez (Main Campus, Gainesville); Dr. Richard Beeson (Mid-Florida REC, Apopka); Dr. Kimberly Klock Moore (Fort Lauderdale REC).			

Course Description

The lecture component of this course is completely web-based. Corresponding labs will be taught on site at the respective campuses. All aspects of plant propagation will be studied that include methods of propagating by seeds, bulbs, divisions, layers, cuttings, budding, grafting, and micropropagation. The timing, technique, and material for making cuttings, environmental conditions, and media requirements for rooting cuttings of ornamental plants, fruit trees, shrubs, and flowering plants will be studied. Various propagation structures, soils, and fertilizer requirements will be considered. Emphasis is placed on the basic principles of plant propagation to provide an adequate background in the areas of agronomy, horticulture, forestry, and other disciplines of plant science.

Prerequisite

BOT 2010C or BSC 2010

Learning Objectives

At the conclusion of this course, students should have:

1. a comprehensive knowledge of the science of plant propagation including the effects of plant physiological reactions, anatomical structure, and environmental influences on material used in plant propagation.
2. skill in the art of plant propagation by seeds and vegetative organs.
3. demonstrated critical thinking through class discussions, outside reading assignments, outside projects, and field practice.

4. a vocabulary of plant propagation terminology and its proper use orally and in writing.
5. an interest, understanding, and appreciation of the principles and techniques of plant propagation.

Course Materials

CANVAS (for lecture print-outs, additional readings, group assignment descriptions, discussions, testing, etc.) <http://elearning.ufl.edu/>

website: <http://irrecenvhort.ifas.ufl.edu/Propagation/index.html>

Course Textbook

Hartmann & Kester's Plant Propagation: Principles and Practices, 9th Edition. 2018. F. Davies, R. Geneve and S.B. Wilson. (**Required**, ISBN-13: 978-0134480893).

There are used desk copies and e-Textbooks available to rent or purchase at a reduced price (see vitalsouce.com; amazon.com and others). Just make sure you get the 9th edition!

Other Useful Book References

**desk copies can be found in the instructor's office*

Beyl, C.A. and R.N. Trigiano. 2015. Plant Propagation Concepts and Laboratory Exercises, 2nd edition. CRC Press, Boca Raton, FL.

Dirr, M.A. and C.W. Heuser, Jr. 2006. The Reference Manual of Woody Plant Propagation-From Seed to Tissue Culture, 2nd edition. Timber Press, Inc., Portland, OR.

Kyte, L., J. Kleyn, H. Scoggins and M. Bridgen. 2013. Plants from Test Tubes: An Introduction to Micropropagation, 4th edition. Timber Press Inc., Portland, OR.

Nau, J. 2011. Ball Redbook. Volume 2, 18th edition. Ball Publishing, West Chicago, IL.

MacDonald, P.T. 2014. The Manual of Plant Grafting: Practical Techniques for Ornamentals, Vegetables, and Fruit. Timber Press, Portland, OR.

Student Responsibilities

- ✓ *Attendance:* You are expected to watch all classes and participate activities
- ✓ *Preparation:* You are responsible for retrieving and reviewing necessary materials prior to scheduled zoom discussions
- ✓ *Exams and assignments:* There are no makeups. In the case of emergencies, assignments will be marked down 5 percentage points for each day late.

Student Evaluation

Any questions regarding your performance on any assignment are welcome. Grading follows University standards and will be based on the following:

**All assignments are to be submitted via Canvas. Assignments will open on Wednesdays at 11:59 pm and close the following Monday at 11:59 pm. There are 3 required zoom sessions. These are scheduled on the Monday prior to each exam from 5:30-6:30 EST.*

Note: although exams and quizzes are open book, students must prepare adequately as these are timed events.

EXAMS (Multiple Choice, T/F, Matching, Short Answer)

Exam 1 (chapters 4-8)	100 pts
Exam 2 (chapters 9-14)	100 pts
Exam 3 (chapters 15-18)	100 pts

ASSIGNMENTS/QUIZZES

Bio/Picture/Video.....	5 pts
Pre-course Survey	5 pts
Quiz 1 (chapters 1-2)	10 pts
Quiz 2 (chapters 3-6)	10 pts
Quiz 3 (chapters 9-11)	10 pts
Post Course Survey.....	10 pts
Zoom Participation (3 @ 5 pts for each of the three).....	15 pts
Laboratory Component (directed by respective lab instructors)	100 pts
Graduate Project (independent project directed by lab instructors).....	35 pts

*Identified lab instructors will oversee lab exercises and graduate student project. These scores will be given to primary lecture instructor to issue a combined lecture/lab grade.

Grading Policy

Final grades will be based on the follow scale: 500 Total Points

93.5-100%	A	468-500 pts
89.5-93.4%	A-	448-467 pts
86.5-89.4%	B+	433-447 pts
82.5-86.4%	B	413-432 pts
79.5-82.4%	B-	398-412 pts
76.5-79.4%	C+	383-397 pts
72.5-76.4%	C	363-382 pts
69.5-72.4%	C-	348-362 pts
66.5-69.4%	D+	333-347 pts
62.5-66.4%	D	313-332 pts
59.5-62.4%	D-	298-312 pts
≤59.4%.....	E	≤297 pts

Course Schedule

Module	Week	Instructor Lectures	Guest Lectures and Videos	Reading Assignment & Self Review	E-learning Assignments
1-General Aspects of Propagation	wk 1 Aug 24-30	How Plant Propagation Evolved in Human Society		Read: Chapter 1 Do: Interactive Self-review	Post your Bio (5 pts) Take Pre-course Survey (5 pts)
	wk 2 Aug 31-Sept 6	Biology of Plant Propagation	Lecture: D. Clark-How Genes Impact Plant Propagation (30 min.)	Read: Chapter 2 Do: Interactive Self Review	
	wk 3 Sept 7-13	The Propagation Environment	Lecture: G. Giacomelli-Greenhouse Systems for Plant Production (102 min.) Lecture: A. Long – Pathogens in Plant Production (15 min.) Video: Drs. Wilson and Giacomelli-Environmental Control at Knox Nursery, Winter Garden, FL (11 min.)	Read: Chapter 3 Do: Interactive Self Review Do: PropG Glossary Term Self Review	Quiz 1: Chapters 1-2 Timed, open book (10 pts)
2-Seed Propagation	wk 4 Sept 14-20	Seed Development Principles and Practices of Seed Selection	Lecture: R. Freyre-Breeding Ornamental Plants (35 min.) Video: D. Clark-Management and Record Keeping in a Plant Breeding Program (30 min.) Video: K. Bhattarai-Gerbera Hybridization (9 min.)	Read: Chapters 4 and 5 Do: Interactive Self Reviews	
	wk 5 Sept 21-27	Techniques of Seed Production and Handling	Lecture: K. Moore - Plug Production (30 min.)	Read: Chapter 6 Do: Interactive Self Review	

	wk 6 Sept 28— Oct 4	Principles of Propagation from Seeds	Lecture: B. Geneve- Physical Seed Dormancy (31 min.) Lecture: X. Li- Seed Priming (18 min.)	Read: Chapter 7 Do: Interactive Self Review	Quiz 2: Chapters 3-6 Timed, open book (10 pts)
	wk 7 Oct 5-11	Techniques of Propagation by Seed	Video: Seedling production at Knox Nursery, Winter Garden, FL (9 min.)	Read: Chapter 8 Do: Interactive Self Review Do: PropG Glossary Term Self Review	Zoom 1: (5 pts) Monday Oct 10, 5:30-6:30 pm EST Review and Discussion with Instructors
3-Vegetative Propagation	wk 8 Oct 12-18	Principles and Practices of Clonal Selection		Read: Chapter 9 Do: Interactive Self Review	Exam 1: Chapters 4-8 Timed, open book (100 pts)
	wk 9 Oct 19-25	Principles of Propagation by Cuttings Techniques of Propagation by Cuttings	Lecture: J. Gibson - Stock Plant Management, Parts 1 & 2 (43 min.) Video: P.J. Klinger- Tour of Lake Brantley Plant Co. (15 min.) Video: F. Davies, M. Thetford & P.J. Klinger- Lake Brantley Plant Co., Center Hill, FL (22 min.) Video: G. Griffith- Tour of Hatchett Creek Farms (7 min.) Video: R. Schoellhorn - Production scheduling and inventory control at Hatchett Creek Farms, Gainesville, FL (16 min.)	Read: Chapters 10 and 11 Do: Interactive Self Review	
	wk 10 Oct 26- Nov 1	Principles of Grafting and Budding		Read: Chapter 12 Do: Interactive Self Review	Quiz 3: Chapters 9-11. Timed, open book (10 pts)

	wk 11 Nov 2-8	Techniques of Grafting Techniques of Budding	Video: J. Williamson budding and grafting demonstration of citrus (15 min.)	Read: Chapters 13 and 14 Do: Interactive Self Reviews	Zoom 2: (5 pts) Monday Nov 7 5:30-6:30 EST ZOOM Review and Discussion with Instructors
	wk 12 Nov 9-15	Layering and Its Natural Modifications		Read: Chapter 15 Do: Interactive Self Review Do: PropG Glossary Term Self Review	Exam 2: Chapters 9-14 Timed, open book (100 pts)
	wk 13 Nov 16-22	Propagation by Specialized Stems and Roots		Read: Chapter 16 Do: Interactive Self Review	
4-Cell and Tissue Culture Propagation	wk 14 Nov 23-29	Principles and Techniques of Micropropagation from Meristematic Tissue	Lecture: M. Kane-Micropropagation (1.38 hr lecture) Video: N. Philman Sterile technique using a laminar flow hood (8 min.) Video: Commercial micropropagation, Agristarts, Inc., Apopka, FL (15 min.)	Read: Chapter 17 Do: Interactive Self Review	Take Post-course Survey: (10 pts)
	wk 15 Nov 30- Dec 6	Principles and Techniques of Plant Tissue Culture from Non-meristematic Tissue	Lecture: W. Vendrame-Embryogenesis (20 min.)	Read: Chapter 18 Do: Interactive Self Review Do: PropG Glossary Term Self Review	Zoom 3: (5 pts) Monday Dec 5 th 5:30-6:30 EST ZOOM Review and Discussion with Instructors
FINAL EXAM	wk 16 Dec 7-13				Exam 3: Chapters 15-18 Timed, open book (100 pts)

Self-review exercises of subject matter for each chapter and glossary terms can be found at http://irrecenvhort.ifas.ufl.edu/creative_tools.html.

UF classes begin August 24st; withdrawal deadline Nov. 21st, classes end Dec 7th, Reading days Dec. 8-9th, final Exams Dec. 10-16th. Holidays Sept. 5th, Oct. 7th, Nov. 11th, Nov. 23-26th

Course Policies and Campus Resources

Grades and Grade Points

For information on current UF policies for assigning grade points, see <https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/>.

Fees: Distance Learning, \$20.00

Attendance and Make-Up Work

Requirements for class attendance and make-up exams, assignments and other work are consistent with university policies that can be found at: <https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/>.

COVID Response Statements

Our class zoom sessions may be audio visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited

Online Course Evaluation Process

Student assessment of instruction is an important part of efforts to improve teaching and learning. At the end of the semester, students are expected to provide feedback on the quality of instruction in this course using a standard set of university and college criteria. Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at:

<https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at: <https://gatorevals.aa.ufl.edu/public-results/>.

Academic Honesty

As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge: *"We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity."* You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, the

following pledge is either required or implied: *"On my honor, I have neither given nor received unauthorized aid in doing this assignment."*

It is assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct to appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see: <http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code>.

Software Use

All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.

Services for Students with Disabilities

The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues. Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation

0001 Reid Hall, 352-392-8565, <https://disability.ufl.edu/>

Campus Helping Resources

Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university's counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

- *University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575,*
www.counseling.ufl.edu

Counseling Services
Groups and Workshops
Outreach and Consultation
Self-Help Library
Wellness Coaching

- U Matter We Care, www.umatter.ufl.edu/
- *Career Connections Center*, First Floor JWRU, 392-1601, <https://career.ufl.edu/>.
- Student Success Initiative, <http://studentsuccess.ufl.edu>.

Student Complaints

- Residential Course: <https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>.
- Online Course: <http://www.distance.ufl.edu/student-complaint-process>