Syllabus

PLS 5222C, Advanced Plant Propagation

Fall 2020 Online, 2 credits

Instructors		Teaching Assistants	
Dr. Sandra Wilson Professor, Gainesville (772) 834-7619 sbwilson@ufl.edu	Dr. Mack Thetford Assoc. Prof., Milton (850) 983-7130 thetford@ufl.edu	Gabriel Campbell Ph.D. student Milton (727) 452-1333 camp5595@ufl.edu	Heather Kalaman M.S/DPM student Gainesville (321) 303-2278 hkalaman@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 virtually attend all classes and 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 based on the following:

**All assignments are to be submitted via Canvas. Assignments will open on Thursdays at 9:00 pm and close the following Tuesday at 9:00 am. 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 and provide scores to Lecture instructor for 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 31-Sept. 4	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 Sept 7-11	Biology of Plant Propagation	**Lecture:** D. Clark- How Genes Impact Plant Propagation (30 min.)	**Read:** Chapter 2 **Do**: Interactive Self Review	
	wk 3 Sept 14-18	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 21-25	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 28-Oct 2	Techniques of Seed Production and Handling	**Lecture**: K. Moore - Plug Production (30 min.)	**Read:** Chapter 6 **Do:** Interactive Self Review	**Quiz 2**: Chapters 3-6 Timed, open book (10 pts)

	wk 6 Oct 5-Oct 9	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	**Zoom 1:** (5 pts) Monday Oct 5, 5:30-6:30 pm EST Review and Discussion with Instructors
	wk 7 Oct 12-16	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	**Exam 1**: Chapters 4-8 Timed, open book (100 pts)
3-Vegetative Propagation	**wk 8** Oct 19-23	Principles and Practices of Clonal Selection		**Read:** Chapter 9 **Do**: Interactive Self Review	
	wk 9 Oct 26-30	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 Nov 2-6	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 9-13	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 9 5:30-6:30 EST ZOOM Review and Discussion with Instructors
	wk 12 Nov 16-20	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 23-27	Propagation by Specialized Stems and Roots		**Read**: Chapter 16 **Do**: Interactive Self Review	
4-Cell and Tissue Culture Propagation	**wk 14** Nov 30-Dec 4	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 Dec 7-11	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 7 5:30-6:30 EST ZOOM Review and Discussion with Instructors
	wk 16 Dec 12-16				**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 31st; drop deadline Nov. 23rd, classes end Dec 9th, Reading days Dec. 10-11th, final Exams Dec. 12-18th. Holidays Sept 7th, Oct. 2-3rd, Nov. 11th, Nov. 25-28th

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/.

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 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