Syllabus
PLS 5222C, Advanced Plant Propagation
Fall 2018 Online, 3 credits

Instructors

Dr. Sandra Wilson
Professor
(772) 834-7619
sbwilson@ufl.edu

Dr. Mack Thetford
Associate Professor
(850) 983-7130
thetford@ufl.edu

Teaching Assistant
Carlee Steppe
M.S. Student
(864) 404-9012
csteppe@ufl.edu

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, 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**)

*There also will be supplemental reading material available online

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 in 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 there is not enough time to look up answers.*

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

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

ASSIGNMENTS/QUIZZES

Bio/Picture and Pre-course Survey ..... ……10 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 .....15 pts
On-site Lab* .....100 pts
Grad Project with lab instructor*.....35 pts

*Designated Lab instructor will oversee lab exercises and graduate student project and provide scores to Lecture instructor.

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

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

Module	Week	Instructor Lectures	Guest Lectures and Videos	Reading Assignment and Self Review*	Canvas Assignments*
1-General Aspects of Propagation	wk 1 Aug 22-28	How Plant Propagation Evolved in Human Society		**Read**: Chapter 1 **Do**: Interactive Self-review	**Post your Bio**: **Take Pre-course Survey** (10 pts)
	wk 2 Aug 29-Sept 4	Biology of Plant Propagation	**Lecture:** D. Clark-How Genes Impact Plant Propagation (30 min.)	**Read:** Chapter 2 **Do**: Interactive Self Review	

	wk 3 Sept 5-11	The Propagation Environment	**Lecture**: G. Giacomelli - Greenhouse Systems for Plant Production (102 min.) **Video**: Drs. Wilson and Giacomelli- Environmental Control at Knox Nursery, Winter Garden, FL (11 min.)	**Read**: Chapter 3 **Do**: Interactive Self Review	**Quiz 1**: Chapters 1-2 Timed, open book (10 pts)
2-Seed Propagation	wk 4 Sept 12-18	Seed Development Principles and Practices of Seed Selection	**Lecture**: R. Freyre- Breeding Ornamental Plants (35 min) **Video**: S. Wilson- Animated Life Cycle of Angiosperms **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 19-25	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 Sept 26-Oct 2	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 1, 5:30-6:30 pm Review and Discussion with Instructors

	wk 7 Oct 3-9	Techniques of Propagation by Seed	**Video**: Seedling production at Knox Nursery, Winter Garden, FL (9 min.)	**Read:** Chapter 8 **Do**: Interactive Self Review	**Exam 1**: Chapters 3-8 Timed, open book (100 pts)
3-Vegetative Propagation	wk 8 Oct 10-16	Principles and Practices of Clonal Selection		**Read:** Chapter 9 **Do**: Interactive Self Review	
	wk 9 Oct 17-23	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 24-30	Principles of Grafting and Budding		**Read**: Chapter 12 **Do**: Interactive Self Review	**Quiz 3**: Chapters 9-11. Timed, open book (10 pts)

	wk 11 Oct 31-Nov 6	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 5 5:30-6:30 Review and Discussion with Instructors
	wk 12 Nov 7-13	Layering and Its Natural Modifications		**Read**: Chapter 15 **Do**: Interactive Self Review	**Exam 2:** Chapters 9-14 Timed, open book (100 pts)
	wk 13 Nov 14-20	Propagation by Specialized Stems and Roots		**Read**: Chapter 16 **Do**: Interactive Self Review	
4-Cell and Tissue Culture Propagation	Wk 14 Nov 21-27	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 28-Dec 4	Principles and Techniques of Plant Tissue Culture from Non-meristematic Tissue	**Lecture**: W. Vendrame-Embryogenesis (20 min.)	**Read:** Chapter 18 **Do**: Interactive Self Review	**Zoom 3:** (5 pts) Monday Dec. 3 5:30-6:30 Review and Discussion with Instructors

	wk 16 Dec 5-11				**Exam 3**: Chapters 15-18 Timed, open book (100 pts)

Course Policies and Campus Resources:

1. Class attendance, make-up exams and other work: Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at: https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx.

2. Accommodations 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. www.dso.ufl.edu/drc/ 0001 Reid Hall, 352-392-8565

3. Textbook: Required, ISBN-13: 978-0134480893

4. UF grading policies for assigning grade points: See https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx.

5. Online course evaluation process:
Students are encouraged to provide feedback on the quality of instruction in this course by completing online evaluations at https://evaluations.ufl.edu. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at https://evaluations.ufl.edu/results/.

6. Distance Learning Fees: $20

7. Critical dates for exams or other work: Critical dates are posted within the Canvas E-Learning system and conform to the general weekly schedule of topics and assignments provided in the tentative lecture schedule.

8. Academic Integrity: 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.

9. 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/cwc/
  Counseling Services
  Groups and Workshops
  Outreach and Consultation
  Self-Help Library, Wellness Coaching
- U Matter We Care, www.umatter.ufl.edu/
- *Career Resource Center,* First Floor JWRU, 392-1601, www.crc.ufl.edu/

10. 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.