

**PLSC 368 - PLANT PROPAGATION, 3 Credits**  
**Spring Semester, 2008**

**CLASS INFORMATION**

- A. Instructors:** Dr. Chiwon W. Lee  
Loftsgard Hall 266F, phone 231-8062, 701-361-9411 (cell)  
e-mail <[chiwon.lee@ndsu.edu](mailto:chiwon.lee@ndsu.edu)>
- Larry Chaput (lab instructor, grafting)  
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- Jacob Berg (lab assistant)  
e-mail <[jacob.berg@ndsu.edu](mailto:jacob.berg@ndsu.edu)>  
Phone 507-990-3472 (cell)
- B. Lectures:** 9:00 - 9:50 a.m. Mon, Wed  
Room 104, Loftsgard Hall
- C. Laboratory:** 2:00-3:50 p.m. Wed  
Horticulture Greenhouse
- D. Web Site:** <http://www.ndsu.nodak.edu/instruct/chlee/plsc368/>

**OBJECTIVES**

The objective of this course is to learn the basic principles and methods of plant propagation practiced in horticulture. After completion of this class, you will have a workable knowledge on seed germination and handling, rooting cuttings of various plant types, procedures for grafting and budding, using underground vegetative organs for plant increase, orchid propagation by rhizome and seed, and tissue culture propagation of selected plants.

**TEXTBOOK**

Hartmann, H.T., D.E. Kester, F.T. Davies, and R.L. Geneve. 2002. *Plant Propagation: Principles and Practices*. 7th edition, Prentice Hall, Upper Saddle River, NJ. 880 pp.

**REFERENCES**

1. Young, J.A. and C.G. Young. 1992. *Seeds of woody plants in North America*. Dioscorides Press, Portland, Oregon.
2. Dirr, M.A. and C.W. Heuser, Jr. 2006. *The reference manual of woody plant propagation: from seed to tissue culture*. Varsity Press, Inc., Athens, Georgia. 410 pp.
3. Annual proceedings of the International Plant Propagators Society.
4. Davis, T.D., B.E. Haissig, and N. Sankhla (eds.). 1988. *Adventitious root formation in cuttings*. Dioscorides Press, Portland, Oregon. 315 pp.
5. Dirr, M.A. 1998. *Manual of woody landscape plants: their identification, ornamental characteristics, culture, propagation and uses*. Stipes Publishing LLC., Champaign, Illinois. 1187 pp.

## READING ASSIGNMENTS

You are expected to read the assigned chapters prior to each lecture period. Start a good reading habit early in the course and continue it throughout the semester. The lectures may not cover all the information in each chapter; however, some quiz and exam questions will be asked from reading assignments.

## LABORATORY

Attendance to lab exercises is required. If you have to miss a lab, please inform the instructor prior to the lab period so that your lab exercise can be rescheduled. Some labs will be group exercises but your active participation is essential. There will be seven lab reports which must be submitted during or by the end of the semester.

## TERM PAPER

Select a horticultural crop of your interest, review literature on its propagation, and write a paper using the HTML. This article will be placed in the student paper section of the web site. You may choose a crop from woody ornamentals, deciduous fruits, tropical fruits and flowers, foliage plants, or new horticultural plants. The format of the paper may vary depending on your crop but should have: title and your name, an abstract, introduction, methods of propagation, future work needed, literature cited. Turn in a hard copy (less than 10 pages in length) and an HTML file on a diskette.

## EXAMINATIONS

There will be three examinations (each 100 points) including the final exam.

## GRADING

	<u>Points</u>	<u>Grading Scale</u>
Exam I	100	A 90 - 100%
Exam II	100	B 80 - 89%
Final Exam	100	C 70 - 79%
Lab Reports	150	D 60 - 69%
Term Paper	100	F below 60%
Total	550	

## OFFICE VISITS

You are welcome to visit my office (Loftsgard Hall 266F) any time I am there. Check with me or the lab assistant for additional literature, supplies and references that you may need for your reports and term paper. I can also be reached by telephone (office 701-231-8062, home 701-239-4935, cell 701-361-9411) so please feel free to call.

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**LECTURE SCHEDULE**

Date		Lecture Topic	Reading Assignment		
Jan	9	Wed	Course introduction	Handouts	-
Jan	14	Mon	Plant propagation-introduction	Chap 1	
Jan	16	Wed	Biology of propagation	Chap 2	
Jan	21	Mon	<i>No class - Martin Luther King Jr. Day</i>	-	
Jan	23	Wed	Biology of propagation	Chap 2	
Jan	28	Mon	Propagation facilities	Chap 3	
Jan	30	Wed	Development of seed	Chap 4	
Feb	4	Mon	Development of seed	Chap 4	
Feb	6	Wed	Principles and practices of seed selection	Chap 5	
Feb	11	Mon	Seed production and handling	Chap 6	
Feb	13	Wed	Seed production and handling	Chap 6	
Feb	18	Mon	<i>No class-Presidents' Day</i>	-	
Feb	20	Wed	<b>Examination I</b>		
Feb	25	Mon	Principles of propagation from seed	Chap 7	
Feb	27	Wed	Techniques of propagation by seed	Chap 8	
Mar	3	Mon	<i>No Class (Spring Break)</i>	-	
Mar	5	Wed	<i>No Class (Spring Break)</i>	-	
Mar	10	Mon	Principles of propagation by cuttings	Chap 9	
Mar	12	Wed	Principles of propagation by cuttings	Chap 9	
Mar	17	Mon	Techniques of propagation by cuttings	Chap 10	
Mar	19	Wed	Techniques of propagation by cuttings	Chap 10	
Mar	24	Mon	Principles of grafting and budding	Chap 11	
Mar	26	Wed	<b>Examination II</b>		
Mar	31	Mon	Principles of grafting and budding	Chap 11	
Apr	2	Wed	Techniques of grafting	Chap 12	
Apr	7	Mon	Techniques of budding	Chap 13	
Apr	9	Wed	Propagation by layering	Chap 14	
Apr	14	Mon	Propagation by specialized stems and roots	Chap 15	
Apr	16	Wed	Principles and practices of clonal propagation	Chap 16	
Apr	21	Mon	<i>No Class (Easter Holiday)</i>	-	
Apr	23	Wed	<i>No Class (Easter Holiday)</i>	-	
Apr	28	Mon	Principles and practices of clonal propagation	Chap 16	
Apr	30	Wed	Principles of tissue culture and micropropagation	Chap 17	
May	5	Mon	Principles of tissue culture and micropropagation	Chap 18	
May	7	Wed	<b>Final Exam (1:00-3:00 p.m.)</b>	-	

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The dates for certain lecture topics are subject to change.

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**LABORATORY SCHEDULE**  
2:00-3:50 p.m. Wednesday

No.	Date	Day	Lab Exercises	Location
1	Jan 9	Wed	<b>Introduction</b> (Greenhouse, facility)	Hort Greenhouse
2	Jan 16	Wed	<b>Propagation by Seed</b> (Stratification, scarification)	Hort Greenhouse
3	Jan 23	Wed	<b>Tissue Culture Propagation</b> (Media preparation, orchid seed germination)	Loftsgard Hall 204
4	Jan 30	Wed	<b>Tissue Culture Propagation</b> (Sterilization, culture initiation)	Loftsgard Hall 204
5	Feb 6	Wed	<b>Cutting Propagation</b> (Deciduous woody plants)	Hort Greenhouse
6	Feb 13	Wed	<b>Cutting Propagation</b> (Evergreen woody plants)	Hort Greenhouse
7	Feb 20	Wed	<b>Cutting Propagation</b> (Herbaceous plants)	Hort Greenhouse
8	Feb 27	Wed	<b>Propagation by Grafting</b> (Knife sharpening, bark and cleft grafts practice)	Hort Greenhouse
9	Mar 5	Wed	No Class (Spring Break)	-
10	Mar 12	Wed	<b>Propagation by Grafting</b> (Bark and cleft graft)	Hort Greenhouse
11	Mar 19	Wed	<b>Propagation by Grafting</b> (Whip and tongue graft)	Hort Greenhouse
12	Mar 26	Wed	<b>Propagation by Budding</b> (T-budding, chip budding)	Hort Greenhouse
13	Apr 2	Wed	<b>Tissue Culture Propagation</b> (Subcultures, soil establishment)	Tissue Culture Lab
14	Apr 9	Wed	<b>Layering, Underground Storage Organs</b> (Ficus, bulbs, corms, scales, tubers)	Hort Greenhouse
15	Apr 16	Wed	<b>Propagation by Special Grafting Techniques</b> (Cactus grafts, seedling grafts, micrografting)	Hort Greenhouse
16	Apr 23	Wed	<b>Propagation by Division</b> (Day lilies, orchids, ferns)	Hort Greenhouse
17	Apr 30	Wed	<b>Free Lab</b> (Terminate experiments, turn in lab reports)	Hort Greenhouse

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This lab schedule is subject to change.