

HORT (CRSS) 4800

Syllabus and Course Materials

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Office	Office Hours	Phone #	Email
Redding Building #125	Mon: 11 – 12 Noon and by appointment	770-412-4093	jenkinst@uga.edu

Prerequisites

BIOL 1107&1107L; CHEM 1211 & 1211L

Lectures

9:05 – 10:20 AM Tues. and Thurs.
Redding Building #171

Books

Chrispeels, M J. and D. E. Sadava. 2002. *Plants, Genes, and Crop Biotechnology*, 2nd ed. Jones and Bartlett Publishers, Sudbury, MA (ISBN 0-7637-1586-7)
Young, P. G.. 2005. *Exploring Genomes*. W. H. Freeman and Co., NY (ISBN: 0-7167-5738-9)

Exams

1. Three scheduled in the syllabus
2. Must be taken at allotted time (refer to Attendance)
3. With doctor's excuse, can make-up one missed exam, which, although covering the same material, will be different from the exam given at the allotted time.
4. Oral presentation counts as **Exam # 4**.
5. Average of exam grades counts 50% of final grade (Refer to Grading).

Quizzes

1. Must be taken at allotted time and will cover material since last quiz.
2. Given at the beginning of class
3. Can't be made up. Missed quiz counts as a O. (Refer to Attendance)
4. One quiz will be dropped.
5. Average quiz grade counts 25% of final grade (Refer to Grading).

Final Exam

1. 12/14/06, 8 AM – 11 AM
2. Redding Building #171
3. Counts 25% of final grade (refer to Grading)

Required Materials (Books can be ordered from amazon.com with a two day turnaround)

- I. Plants, Genes, and Crop biotechnology. 2003. M. J. Chrisspeels & David E. Sadava, Eds. Jones and Bartlett
- II. Young, P. G. 2003. Exploring Genomes
- III. Handouts of specific journal articles and problems

Course Description

Production agriculture now encompasses genetically engineered or transgenic cultivars produced through biotechnology. This course is designed to cover key concepts in the structure and manipulation of DNA and inheritance of genes, traditional plant, breeding, the current impact of biotechnology on crop production and animal agriculture, plus regulatory, intellectual property, environmental, societal, and marker issues specific to transgenic crops.

Learning Outcomes

Students who successfully complete HORT 4800 will have a basic understanding of the following:

- mitosis, meiosis and the cell cycle
- Basic Mendelian Genetics
- DNA structure and basic processes: recombination, eukaryotic transcription
- Basic bioinformatics as outlined in Young's 2003 book, *Exploring Genomes*
- benefits and risks associated with biotechnology
- current impact of biotechnology on agriculture and society
- basic techniques used in biotechnology to include: DNA extraction, DNA fingerprinting technologies, cell culture and cell transformation, in situ hybridization
- specific issues such as transgenic animals, crops and grasses.

Statement of Academic Integrity

It is expected that each student will behave honorably throughout this course. Thus all academic work must meet the standards contained in "A Culture of Honesty." Each student is responsible for informing themselves about these standards before performing any academic work (refer to http://www.uga.edu/ovpi/academic_honesty/academic_honesty.htm). All violations of the *Honor Code* will be referred to the Assistant Dean for Academic Affairs' office.

Documented Disability Statement

(For Griffin Campus)

Students with a documented disability must inform the instructor at the close of the first class meeting. You will be referred to the Office of Academic Programs, Room 107 in the Flynt Building for consultation regarding evaluation, documentation of your disability, and a recommendation as to the accommodation, if any, to be provided. Students must provide instructors with an accommodation form from the Office of Academic Programs listing reasonable accommodation to sign and return to the Office of Academic Programs. Students who do not wish to receive services are still **strongly** encouraged to register with the Office of Academic Affairs.

Attendance

- Attendance is mandatory. Students are expected to attend and participate in all class sessions.
- Students are not allowed to make up a quiz. The lowest quiz grade will, however, be dropped. Missed quizzes are recorded as a “0”.
- Students must take all exams at the time allotted. They may make up one missed exam. Students will not, however, be given the same exam that was missed.

Requirements

- Students are expected to read assigned material before the corresponding lecture and/or guest presentation. This includes both textbook and/or other material.

Grading:

Quiz Avg	Exam Avg	Final Exam	Total
25%	50%	25%	100%

Testing

- Each **exam** will cover about 75% new material and 25% old material, e.g. Exam 2 will cover about 75% new and about 25% previously covered material.
- Pop quizzes will be given at the beginning of class. Each will take approximately 15 minutes.
- Final exam (Dec 14, 8:00 AM – 11: 00 AM) will be comprehensive (25% from previous exams and 75% new material)

Oral Presentation

Each student must give a 30 minute presentation on a topic (no two students may have the same topic) that they have thoroughly researched. This will include at least 5 minutes for questions. This will count as **Exam # 4**. Oral presentations will be graded according to the following criteria.

Organization and Content (45%):	Poor		Avg.	Excellent	
Appropriate Introduction	1	2	3	4	5
Clear Thesis	1	2	3	4	5
Presentation Organization	1	2	3	4	5
Adequate Support for Ideas (Weighted 2x)	2	4	6	8	10
Definite Conclusion	1	2	3	4	5
PowerPoints (Appropriateness & Effectiveness)	1	2	3	4	5
Q & A Session-Knowledge of Topic	1	2	3	4	5
Use of Allotted Time	1	2	3	4	5
Presence (15%):					
Physical Appearance, Neatness, and Grooming	1	2	3	4	5
Posture, Gestures, and Movement	1	2	3	4	5
Eye Contact	1	2	3	4	5
Delivery and Grammar (40%):					
Enthusiasm and Vocal Variation (freedom from monotone)	1	2	3	4	5
Preparation and Knowledge of Materials	1	2	3	4	5
Effectiveness of Delivery Method	1	2	3	4	5
Vocabulary and Use of Appropriate Words	1	2	3	4	5
Freedom from Distracting "Uh"s & "Like"s, etc.	1	2	3	4	5
Pronunciation, Enunciation, Audibility, and Clarity	1	2	3	4	5
Grammar (Weighted 2x)	2	4	6	8	10

Total score out of a possible 100 points: Grade:

Topics from which to choose:

- 1) The importance of farm animal genomics
- 2) Explain: 1) the function of the Scottish Stem Cell Network (SSCN), and 2) what the U.S. is doing in this area generally and UGA specifically.
- 3) Nutritional genomics: the next frontier in the postgenomic era?
- 4) Global Warming: How could it cause changes in agriculture as we know it?
- 5) Bioenergy fuels: Why is this important to agriculture?
- 6) Why plant genome projects?
- 7) The pros and cons of genetically engineered crops.

After ample notification, the instructor may change this syllabus at any time to facilitate student learning.

Assignments

Day/Date	Lecture	Text Chap	Other Assignments
Th, Aug. 17	Introduction/Orientation		
Aug 16-21	DROP/ADD		
Tu,, Aug 22	Introduction to Agricultural biotechnology	Chap. 1	http://desip.igc.org/mapanim.html Daily, G. C. & P. R. Ehrlich. 1996. Ecology. Appl. 6: 991-1001 (Handout)
Th, Aug 24	Agricultural R&D, Productivity, & Global Prospects.	Chap 2	
Tu, Aug 29	Development, Productivity & Sustainability	Chap. 3	
Th, Aug 31	Food Security: Why do hunger and malnutrition persist?	Chap. 4	Rosenzweig et al. 2004. Water resources for agriculture in a changing climate: international case studies. <i>Global Environ Change</i> 14: 345-360. (Handout)
Tu, Sept 5	Developing Food Production Systems	Chap. 5	
Th, Sept 7	Exam 1		
Tu, Sept 12	Mitosis/Meiosis	Chap 6	Genetics: A Conceptual Approach by B. A. Pierce, pp 23-40 (Library Reserve) Topic from list must be chosen
Th, Sept 14	DNA Structure/ Replication	Chap.6 pp137-138	Watson, J. D. and F. H. C. Crick 1953. Nature p. 737 Genetics: A Conceptual Approach by B. A. Pierce, pp 275-279 (Library Reserve)
Tu, Sept 19	Transcription	Chap 6	Genetics: A Conceptual Approach by B. A. Pierce. Ch 13 (Library Reserve)
Th, Sept 21	Translation	Chap 6	Genetics: A Conceptual Approach by B. A. Pierce. Ch 14, (Library Reserve)
Tu, Sept 26	Recombinant DNA Technology (Redding Lab #171)		Genetics: A Conceptual Approach by B. A. Pierce. Ch 18, (Library Reserve) Review PCR Protocol
Th, Sept 28	Recombinant DNA Technology (Redding Lab #171)		Genetics: A Conceptual Approach by B. A. Pierce. Ch 18, (Library Reserve) Review cloning protocol
Tu, Oct 3	Exam 2		
Th, Oct 5	The Genetic Basis of Growth & Development (Redding Lab #171)	Chap 8	Readings to be assigned
Tu, Oct 10	The Genetic Basis of Growth & Development (Redding Lab #171)	Chap 8	Readings to be assigned
Th, Oct 12	Tour of USDA Seed Germplasm Facilities (Dr. M. Harrison-Dunn) (Redding Lab #171)		Preliminary Topic Outline Due Review lab procedure handouts
Tu, Oct 17	Plant tissue culture and transformation(Dr. M. Harrison-Dunn) (Redding Lab #171)		Review lab procedure handouts
Th, Oct 19	Cloning (Dr. N. Barkley) (Redding Lab #171)		Review lab procedure handouts

Tu, Oct 24	Cloning and SSR Verification: A Case Study (Dr. N. Barkley) (Redding Lab #171)		Review lab procedure handouts
Th, Oct 26	FALL BREAK		Review lab procedure handouts
Tu, Oct 31	AFLP Marker Analysis (Matt Chappell) (Redding Lab #171)		Review lab procedure handouts
Th, Nov 2	AFLP Marker Analysis (Matt Chappell) (Redding Lab #171)		Review lab procedure handouts
Tu, Nov 7	Transgenic turf grass (bent grass) Dr. C. Waltz (Redding Lab #171)		Review lab procedure handouts
Th, Nov 9	Herbicide tolerance (Dr. T. Murphy) (Redding Lab #171)		Review lab procedure handouts
Tu, Nov 14	In situ Hybridization (Dr. Z. Chen) (Redding Lab #171)		Review lab procedure handouts
Th, Nov 16	Plants as Chemical and Pharmaceutical Factories (Redding Lab #171)	Chap 19	Briggs, S. P. 1998. Plant genomics: More than food for thought. Proc. Natl. Acad. Sci. USA. 95: 1986-1988. (Journal in Library) Preliminary presentation completed
Tu, Nov 21	Genetically Modified Crops (GMO)	Chap 20	
Th, Nov 23	THANKSGIVING HOLIDAY		
Tu, Nov 28	Exploring Genomes: The Internet and Genetics by Paul G. Young		Exploring Genomes by Young
Th, Nov 30	Exploring GenBank: Redding Lab #171		
Tu, Dec 5	Projects: 30 minute Presentations: Faculty and Students invited		Exam 4
Th, Dec 14	FINAL EXAM 8 AM – 11 AM		Redding Building #171