HORT/CRSS 4800/6800
"Agricultural Biotechnology"

Tifton Campus, Spring 2006
8:00-9:15 Tuesday, Thursday

Instructors:

Peggy Ozias-Akins, Horticulture, Rm 106 NESPAL, 386-3902, pozias@uga.edu
Peng Chee, Crop and Soil Sciences, Rm 119 NESPAL, 391-2683, pwchee@uga.edu

Prerequisite:

(BIOL1103-1103L) or BIOL 1107-1107L (preferred)

Textbook (recommended):

Plants, Genes, and Crop Biotechnology. 2003. M.J. Chrispeels & David E. Sadava, Eds. Jones and Bartlett.
Required additional readings will be made available on WebCT, as handouts, or as library reserve materials.

Course Objectives:

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 market issues specific to transgenic crops.

Students should achieve an understanding of
1) the similarities and differences between methods for traditional and non-traditional crop improvement
2) the techniques required for the development of improved cultivars through biotechnology
3) the benefits and risks associated with biotechnology
4) the current impact of biotechnology on society

Grading:

Attendance: 10%
Class participation: 10%
Written assignments: 20%
Section quizzes: 20%
Exams (Midterm and Final): 20%
Oral presentation: 20%

Course Outline

Jan. 10, 12 (Ozias)
- Orientation & introduction to agricultural biotechnology
- Agriculture and society

Jan. 17, 19, 24 (Chee)
- Mendelian genetics
- Plant domestication
- Traditional methods of crop improvement

Jan 26, 31, Feb. 2, 7 (Ozias)
- Structure of DNA
- Genes and genomes
- Cell cycle and cell division
- Mitosis and meiosis
- Plant reproduction and life cycle

Feb. 9, 14, 16, 21 (Chee)
- Recombinant DNA technology
- Analysis of DNA
- Genetic mapping
- DNA fingerprinting
- Marker assisted selection

Feb. 23
- Project Guidelines
- DNA Extraction Demo
- Review

Feb. 28
- Exam
- Midpoint withdrawal deadline Mar. 7

Mar. 2, 7, 9 (Ozias)
- Plant tissue culture
- Transformation
- Transgene analysis and expression

Mar. 13-17
- Spring Break

Mar. 21, 23, 28 (Chee)
- Insect resistance
- Abiotic stress
- Herbicide tolerance

March 30, Apr. 4, 6 (Ozias)

- Virus resistance
- Value-added traits
- Transgenic animals and cloning

Apr. 11, 13, 18

- Student presentations

Apr. 20 (Guest speaker, date subject to change)

- Regulatory, intellectual property, and ethical issues

Apr. 25

- Field trip

Apr. 27

- Review

May 9 (8.00 – 11.00 am)

- Final Exam

Academic Honesty

> All academic work must meet the standards contained in "A Culture of Honesty" (http://www.uga.edu/ovpi/academic_honesty/culture_honesty.htm). Each student is responsible to inform themselves about those standards before performing any academic work.

The course syllabus is a general plan; deviations announced to the class by the instructor may be necessary.