

ADVANCED SCHOLARS

UNIVERSITY OF NEBRASKA-LINCOLN

Faculty**DON LEE**Professor, Agronomy
and Horticulture

Dr. Lee has taught genetics at UNL for 16 years. He is an expert in teaching the latest in crop genetics, and his research involves DNA-based diagnostics in plants that range from endangered species to noxious weeds.

Dr. Lee also plays a key role in an educational research and development team that explores new ways of teaching genetics with computer technology.

BIOTECHNOLOGY: FOOD, HEALTH AND ENVIRONMENT (AGRI 115)

3 Credits (Available Spring Semester Only)

Course Description

AGRI 115 focuses on the application of biotechnology to genetically engineer, identify, select or propagate microbes, plants or animals. Emphasis is on the scientists who use biotechnology to solve problems with the environment, with our food system or with human health.

Course Objectives

1. Describe how biotechnology is used to solve problems.
2. Diagram the relationship between genes, proteins and traits in living things.
3. List the possible functions of proteins in controlling traits.
4. Determine where plant and animal breeding plays a vital role in developing organisms with desired traits.
5. Outline the steps for using genetic engineering to introduce new traits into microbes, plants and animals.
6. Rank the relative difficulty for introducing genes into the genome of microbes, plants and animals.
7. Identify where gene cloning and gene discovery are critical in genetic engineering.
8. Employ gene design strategies that will result in the desired transgene expression.
9. Describe the importance of cell and tissue culture in biotechnology.
10. Apply the available techniques scientists have to detect the difference between individuals at the protein and DNA levels.

Course Components

- Exams
- Weekly Assignments
- Final Presentation

Technology Requirements

Access to e-mail, the Internet and QuickTime required.

UNL's College of Agricultural Sciences and Natural Resources wishes to capitalize on opportunities for high school students by: offering introductory science-based college credit-bearing courses via distance; hosting on-campus, credit-bearing science-based workshops; increasing the number of high school students conducting supervised research projects with University faculty; and featuring student research projects during on-campus undergraduate research fairs.

Participation in college-level coursework, workshops and research projects associated with the Nebraska Academy will provide an enhancement of high school learning. Additionally, students will be able to experience the academic demands of college while still high school students, as well as practice their time management skills as they learn to balance multiple academic demands. Some of the courses feature inquiry-based activities, which include insect pet exercises and Web-based assignments, engage students and promote problem-solving and critical thinking skills, and many courses offered in the Nebraska Academy satisfy University science and technology requirements.

Several Nebraska high school students recently participated in the Nebraska Academy and provided the following feedback:

"I'm glad I took this course. It was a good experience, and it even convinced me to take another course."

"I liked the course because it challenged me to do something new, and it will benefit me in the future..."

"...I'm extremely excited to have another chance in attending a college course from UNL. I look forward to learning many new things..."

"I thought the course was interesting and opened my eyes..."