

ANSC 4305 AGRICULTURAL GENETICS

Instructor: DeMetris Reed, Jr.
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Spring 2024
Time: Web-delivered
Meeting Place: Web-delivered

This web-delivered course will be accessible through Blackboard. Class correspondence will be through Blackboard or student's SRSU email account.

Course Description:

This course is designed to introduce students to the quantitative genetic principles applied to mating and selection of domestic livestock and wildlife. The course integrates Mendelian principles with biometrical and statistical probability techniques for proper application to breeding, selection, inbreeding, line breeding, and pedigree information for progressive animal and plant breeding. The influences of gene frequency, heritability, and genetic relationships on the gene pool of populations is integrated into this course. The course includes application of the Hardy-Weinberg law and statistical correlation and regression as applied to selection of superior genetic lines of animals.

Course Objectives:

By the end of the course, you will be able to understand:

1. Cell functions.
2. Genetics and biotechnology applications.
3. Genetic engineering.
4. Genetically modified organisms.
5. Cloning.
6. Potential dangers of biotechnology.

Marketable Skills for Department of Animal Science:

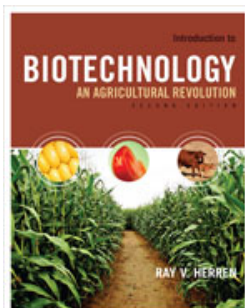
1. Knowledge of techniques and equipment for planting, growing, and harvesting food products (both plant and animal) for consumption, including storage/handling techniques.
2. Knowledge of plant and animal organisms, their tissues, cells, functions, interdependencies, and interactions with each other and the environment.
3. Understanding the implications of new information for both current and future problem solving and decision-making.
4. Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.

5. Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions. Communicating finding in both oral and written form at a level appropriate for the needs of the audience.

Departmental Projected Learning Outcomes:

1. Demonstrate the basic skills of interpreting research data gathered in an agricultural context.
2. Apply critical thinking skills to mitigate potential challenges in diverse animal sciences and related agricultural industries.
3. Develop problem-solving skills, and demonstrate the ability to communicate through written, spoken, and graphical methods.

Text: NOT Required.



Introduction to Biotechnology, 2nd Edition
 Ray V. Herren University of Georgia, Athens (Emeritus)
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 Barnes & Noble: <http://www.barnesandnoble.com>

Exams:

There will be two midterms and a final exam which will be available on Blackboard. Exams will cover readings, PowerPoint presentations and study guide materials. The final exam will only cover materials scheduled after the second midterm.

Grading:

Midterm 1	100 points
Midterm 2	100 points
Final	100 points
Total 300 points	

Grade assignment: A =100-90; B = 89-80; C= 79-70; D = 69-60 and F= < 60.

Exam schedule:

Midterm 1 – Wednesday, February 23.

Midterm 2 – Wednesday, March 31.
Final – Friday, April 29.

16 week calendar (subject to change)

<u>Week</u>	<u>Presentation Order of Topics:</u>	<u>Readings and Assignments:</u>
2	Chapter 1. The Phenomena of Biotechnology.	<ul style="list-style-type: none">• Syllabus• Textbook - Chapter 1• Lecture slides – Chapter 1• Study Guide – Chapter 1
3	Chapter 2. The Historical Development of Biotechnology.	<ul style="list-style-type: none">• Textbook - Chapter 2• Lecture slides – Chapter 2• Study Guide – Chapter 2
4	Chapter 4. Cells: The Foundation of Life.	<ul style="list-style-type: none">• Textbook - Chapter 4• Lecture slides – Chapter 4• Study Guide – Chapter 4
5	Chapter 5. The Principles of Gene Transfer.	<ul style="list-style-type: none">• Textbook - Chapter 5• Lecture slides – Chapter 5• Study Guide – Chapter 5
6	Chapter 6. Producing Genetically Modified Organisms.	<ul style="list-style-type: none">• Textbook - Chapter 6• Lecture slides – Chapter 6• Study Guide – Chapter 6
6	Chapter 7. Animal Cloning. Midterm Number 1.	<ul style="list-style-type: none">• Textbook - Chapter 7• Lecture slides – Chapter 7• Study Guide – Chapter 7
7	Chapter 8. Plant Cloning. Chapter 9. Biotechnology in Plant Science.	<ul style="list-style-type: none">• Textbook - Chapter 8• Lecture slides – Chapter 8• Study Guide – Chapter 8• Textbook - Chapter 9• Lecture slides – Chapter 9• Study Guide – Chapter 9
8	Spring Break	
9	Chapter 10. Biotechnology in Animal Reproduction.	<ul style="list-style-type: none">• Textbook - Chapter 10• Lecture slides – Chapter 10

		<ul style="list-style-type: none"> • Study Guide – Chapter 10
10	Chapter 11. Biotechnology in Medicine.	<ul style="list-style-type: none"> • Textbook - Chapter 11 • Lecture slides – Chapter 11 • Study Guide – Chapter 11
11	Chapter 12. Biotechnology in the Food Industry. Midterm Number 2.	<ul style="list-style-type: none"> • Textbook - Chapter 12 • Lecture slides – Chapter 12 • Study Guide – Chapter 12
12	Chapter 13. Biotechnology in Ecology.	<ul style="list-style-type: none"> • Textbook - Chapter 13 • Lecture slides – Chapter 13 • Study Guide – Chapter 13
13	Chapter 14. Consumer Concerns about Biotechnology.	<ul style="list-style-type: none"> • Textbook - Chapter 14 • Lecture slides – Chapter 14 • Study Guide – Chapter 14
14	Chapter 15. Ethical Issues and Biotechnology.	<ul style="list-style-type: none"> • Textbook - Chapter 15 • Lecture slides – Chapter 15 • Study Guide – Chapter 15
15	Chapter 16. Careers in Biotechnology.	<ul style="list-style-type: none"> • Textbook - Chapter 16 • Lecture slides – Chapter 16 • Study Guide – Chapter 16
16	Final Exam	

Sul Ross State University is committed to equal access in compliance with the Americans with Disabilities Act of 1973. It is the student's responsibility to initiate a request for accessibility services. Students seeking accessibility services must contact Mary Schwartz, M. Ed., L.P.C., in Counseling and Accessibility Services, Ferguson Hall, Room 112. The mailing address is P.O. Box C-122, Sul Ross State University, Alpine, Texas. Telephone: 432-837-8691. E-mail: mschwartz@subross.edu

Students enrolled in distance education courses have equal access to the university's academic support services, such as Smarthinking, library resources, such as online databases, and instructional technology support. For more information about accessing these resources, visit the SRSU website. Students should correspond using Sul Ross email accounts and submit online assignments through Blackboard, which requires secure login information to verify students' identities and to protect students' information. The procedures for filing a student complaint are included in the student handbook. Students enrolled in distance education courses at Sul Ross are expected to adhere to all policies pertaining to academic honesty and

appropriate student conduct, as described in the student handbook. Students in web-based courses must maintain appropriate equipment and software, according to the needs and requirements of the course, as outlined on the SRSU website.