

Course Title:	Animal Breeding & Genetics
Grade(s):	11th/12th

Course Description
Prerequisite: 70 or better in Biology The reproductive systems of animals, including physiology, controls, and management techniques, will be investigated. Breed evaluation based on conformation, pedigree, and production standards will be covered, as well as breeding systems for various species.
Approved Curricular Materials/Textbook(s)

Unit Title	Unit Description (Include Unit Objectives)	Unit Pacing
Unit 1: SAE Capstone	This unit starts all second-semester agriscience courses. Students present their SAE capstone presentations in class to share with their peers. This is a requirement of the agriscience program each year and provides scaffolding to have 12th graders present their final SAE Capstone presentation in their final year. Students will: • Use effective communication skills to present what their SAE was and the skills that they gained throughout the project. • Be engaged listeners to their peers and ask content-specific questions based on each student's presentation.	1 week
Unit 2: Introduction to Animal Breeding Terminology	This unit is designed to review and introduce terminology used in breeding & genetics. Students in this course have taken basic animal science level courses, but having a working knowledge of animal terminology is important to start with. Additionally, students will investigate careers in the breeding & genetics industry.	2 weeks

	Students will: • Use appropriate animal terminology in order to describe animals depending on their age. • Evaluate career opportunities within the animal breeding & genetics fields.	
Unit 3: Male & Female Anatomy	In this unit, students will be grounded in the basic terminology and anatomy of animal reproduction. Students will learn about the male and female anatomy of livestock and domesticated species, including cattle, sheep, swine, poultry, dogs, cats, and rabbits. Students will: • Identify and label major reproductive anatomy. • Describe the functions of reproductive anatomy. • Identify differences between male and female anatomy in animals. • Identify differences between species of reproductive tracks.	2 weeks
Unit 4: Endocrinology	In this unit, students learn how hormones affect the reproductive cycles. Students will learn about the full reproductive process and the changes in an animal's body that occur hormonally. Students will: • Describe the difference between Estrous and Estrus. • Identify signs of Estrus (heat) in an animal based on the species. • Identify types of reproductive cycles that each species has (seasonal estrus, polyestrus, monoestrus). • Describe the types and purposes of each male and female hormone, and when those hormones are higher or lower in the animal during the breeding cycles.	2 weeks
Unit 5: Reproductive Behavior	In this unit, students will learn the various breeding behaviors of each species. Students will: • Identify signs of breeding. • Describe differences in the process of breeding and mating behaviors.	2 weeks

Unit 6: Methods of Reproduction	This unit encompasses the discussion as to which breeding method is used for different production systems, species, and facilities. Students will: • Describe the difference between selective breeding, stud mating, and artificial insemination. • Describe the benefits and disadvantages of each type of breeding system and why a producer would choose that method for the species.	2 weeks
Unit 7: Gestation & Parturition	This unit takes students through the process of gestation and parturition of each species. Students will learn about the length of gestations, monitoring systems, and then learn about the signs of parturition. Students will also be led through simulations on how to identify a proper birth and when intervention is needed. Students will: • Identify gestation lengths of different animal species. • Calculate the date of parturition based on the date of breeding. • Describe proper care needed during partition (nutrition; monitoring). • Identify signs of parturition. • Describe and demonstrate how to assist in a birth and how to care for a newborn. • Identify dystocia and how to assist in a difficult birth.	2 weeks
Unit 8: Genetics in the Animal Industry	In this unit, students will learn about the genetics involved with the breeding of animals. From coat color to genetic mutations, students will learn how these traits are passed on. Students will: • Calculate and predict rates of inheritance based on Mendelian genetics. • Describe different genetic mutations that exist in each livestock and companion species. • Identify genetic technologies that are being used to make genetic gains and prevent disorders.	2 weeks