

Western Technical College

10006178 Animal Reproduction

Course Outcome Summary

Course Information

Description	This course will provide students a thorough understanding of the anatomy and physiology of the male and female reproductive system. Students will explore the development of the ova and sperm, fertilization of the egg, and growth of the embryo. All aspects of artificial insemination will also be examined, with students gaining basic skills in estrus manipulation, heat detection and AI technique.
Career Cluster	Agriculture, Food and Natural Resources
Instructional Level	Associate Degree Courses
Total Credits	3
Total Hours	72

Textbooks

006-178 Animal Reproduction Handouts. Western. Publisher: Western. Required.

Learner Supplies

Calculator - \$10. **Vendor:** Campus Shop. Required.

Three-ring binder. **Vendor:** Campus Shop. Required.

Success Abilities

1. Apply mathematical concepts.
2. Demonstrate ability to think critically.
3. Demonstrate ability to value self and work ethically with others in a diverse population.
4. Make decisions that incorporate the importance of sustainability.
5. Transfer social and natural science theories into practical applications.
6. Use effective communication skills.
7. Use technology effectively.

Program Outcomes

1. Interact as a professional in Agribusiness

2. Investigate opportunities in Agribusiness
3. Apply relevant technologies
4. Create a Livestock Management plan

Course Competencies

1. Examine the anatomy and physiology of the female reproductive system.

Assessment Strategies

- 1.1. Written Product
- 1.2. Drawing/Illustration

Criteria

You will know you are successful when

- 1.1. you identify the stages of follicular development in the ovary.
- 1.2. you associate the stages of follicular development and the animal's sexual behaviors.
- 1.3. you create an illustration of the female reproductive tract and identify the anatomy.

Learning Objectives

- 1.a. Identify the anatomy of the female reproductive tract
- 1.b. Explain the function of each part of the female reproductive tract

2. Examine fertilization and early embryonic development.

Assessment Strategies

- 2.1. Written Product

Criteria

You will know you are successful when

- 2.1. you describe factors influencing fertilization.
- 2.2. you distinguish between the stages of gestation.
- 2.3. you relate the stages of embryo development with the stages of gestation.
- 2.4. you explain the optimal timing of implantation in the cow.

Learning Objectives

- 2.a. Identify the steps of early embryonic development.
- 2.b. Describe the fertilization process.
- 2.c. Explain steps for successful fertilization of an ova.

3. Examine reproductive endocrinology.

Assessment Strategies

- 3.1. Written Product
- 3.2. Written Objective Test
- 3.3. Essay

Criteria

You will know you are successful when

- 3.1. you identify the location of the endocrine glands involved in reproduction.
- 3.2. you associate the hormones produced by the glands of the endocrine system.
- 3.3. you explain the production of steroid hormones from the ovary and testes.
- 3.4. you associate the function of the reproductive hormones produced by the endocrine system.
- 3.5. you describe how the reproductive hormones of the female relate to the development of the follicle.
- 3.6. you describe how the reproductive hormones relates to the animals behavior.

Learning Objectives

- 3.a. Identify the anatomy of the endocrine system
- 3.b. Explain the function of the hormones in the development of the sperm and ova.

4. Identify the signs of behavioral estrus in a cow, sow and mare.

Assessment Strategies

- 4.1. Report
- 4.2. Clinical Evaluation

Criteria

You will know you are successful when

- 4.1. you describe the stages of estrus.
- 4.2. you explain the symptoms of 'standing heat' of cows, sows or mares.
- 4.3. you explain equipment used in identifying cattle in 'standing heat'.

Learning Objectives

- 4.a. Define reproductive hormones produced naturally
- 4.b. Explain when and why hormone injections are given to improve infertility
- 4.c. Analyze the estrus cycle from the ova through fertilization including proestrus, estrus, metestrus, and diestrus
- 4.d. Explain how external factors influence reproduction.

5. Examine the anatomy and physiology of the male reproductive system.

Assessment Strategies

- 5.1. Written Product
- 5.2. Drawing/Illustration

Criteria

You will know you are successful when

- 5.1. you identify the anatomy of the male reproductive system.
- 5.2. you describe the stages of spermatogenesis in the testis.
- 5.3. you create an illustration of the male reproductive system, correctly labeling the anatomy.

Learning Objectives

- 5.a. Identify the anatomy of the male reproductive system
- 5.b. Explain the development of sperm and semen

6. Document the proper methods of handling semen.

Assessment Strategies

- 6.1. Demonstration
- 6.2. Research Paper

Criteria

You will know you are successful when

- 6.1. you design a protocol that describes the proper handling and storage of semen.
- 6.2. you describe the different methods of collecting semen.
- 6.3. you determine the ingredients of semen extenders.
- 6.4. you describe the process of freezing semen.

Learning Objectives

- 6.a. Discuss the collection, extension, and storage of semen
- 6.b. Describe the most successful insemination techniques
- 6.c. Explain timing of insemination for maximum conception

7. Explore current technologies in animal reproduction.

Assessment Strategies

- 7.1. Written Product

Criteria

You will know you are successful when

- 7.1. you explain use of embryo transfer in genetic improvement.
- 7.2. you give examples of how gene editing in embryo's can improve production.
- 7.3. you explain the role of cloning in animal production.

7.4. you discuss the use of cryopreservation of sperm, eggs and embryo's.

Learning Objectives

7.a. Select technology for activity monitoring.

7.b. Apply reproductive benchmarks

7.c. Use different treatments and protocols to enhance reproduction.

7.d. Relate the role of technology in advancing reproduction standards.