

**EQSCI 53 Course Outline as of Fall 2018****CATALOG INFORMATION**

Dept and Nbr: EQSCI 53 Title: EQUINE REPRODUCTION

Full Title: Equine Reproduction

Last Reviewed: 8/28/2017

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	1.00	Lecture Scheduled	1.00	17.5	Lecture Scheduled	17.50
Minimum	1.00	Lab Scheduled	0	6	Lab Scheduled	0
		Contact DHR	0		Contact DHR	0
		Contact Total	1.00		Contact Total	17.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 35.00

Total Student Learning Hours: 52.50

Title 5 Category: AA Degree Applicable

Grading: Grade or P/NP

Repeatability: 00 - Two Repeats if Grade was D, F, NC, or NP

Also Listed As:

Formerly: AG 114

**Catalog Description:**

This course combines the study of basic genetic principles with the study of the anatomical and physiological aspects of reproduction as they relate to equine reproduction. Genetic principles to be emphasized include basic inheritance, selection techniques, mating systems, heterosis, and performance evaluation. Reproductive aspects to include endocrinology, estrous cycles, mating behaviors, gametogenesis, conception, gestation, parturition, and maternal behaviors. Artificial insemination, embryo manipulation, and current innovations in productive biotechnology will also be examined.

**Prerequisites/Corequisites:****Recommended Preparation:**

Eligibility for ENGL 100 or ESL 100

**Limits on Enrollment:****Schedule of Classes Information:**

Description: This course combines the study of basic genetic principles with the study of the anatomical and physiological aspects of reproduction as they relate to equine reproduction.

Genetic principles to be emphasized include basic inheritance, selection techniques, mating systems, heterosis, and performance evaluation. Reproductive aspects to include endocrinology, estrous cycles, mating behaviors, gametogenesis, conception, gestation, parturition, and maternal behaviors. Artificial insemination, embryo manipulation, and current innovations in productive biotechnology will also be examined. (Grade or P/NP)

Prerequisites/Corequisites:

Recommended: Eligibility for ENGL 100 or ESL 100

Limits on Enrollment:

Transfer Credit: CSU;

Repeatability: Two Repeats if Grade was D, F, NC, or NP

## **ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:**

<b>AS Degree:</b>	<b>Area</b>	<b>Effective:</b>	<b>Inactive:</b>
<b>CSU GE:</b>	<b>Transfer Area</b>	<b>Effective:</b>	<b>Inactive:</b>
<b>IGETC:</b>	<b>Transfer Area</b>	<b>Effective:</b>	<b>Inactive:</b>
<b>CSU Transfer:</b>	Transferable	Effective: Spring 2005	Inactive: Fall 2024
<b>UC Transfer:</b>		Effective:	Inactive:

**CID:**

**Certificate/Major Applicable:**

Both Certificate and Major Applicable

## **COURSE CONTENT**

### **Student Learning Outcomes:**

At the conclusion of this course, the student should be able to:

1. Demonstrate knowledge of basic genetic principles with the study of the anatomical and physiological aspects of reproduction as they relate to equine reproduction including basic inheritance, selection techniques, mating systems, heterosis, and performance evaluation.
2. Describe reproductive aspects to include endocrinology, estrous cycles, mating behaviors, gametogenesis, conception, gestation, parturition, and maternal behaviors.
3. Describe artificial insemination, embryo manipulation, and current innovations in productive biotechnology.

### **Objectives:**

At the conclusion of this course, the student should be able to:

1. Examine concepts of gene frequency, alleles, homozygosity, heterozygosity, dominance, co-dominance, and recessive genes.
2. Compare and contrast artificial and natural mating and selection systems.
3. Compile the possible genetic and phenotype ratios for two traits, resulting from the mating of two heterozygous individuals, by using the Punnet Square method.
4. Describe the effect of heritability on selection progress for individual traits.
5. Interpret EPD's, ratios, breeding values, and indexes for use in sire selection.
6. Critique the mating concepts of inbreeding, linebreeding, outcrossing, and crossbreeding.
7. Describe the physiological functions of the major anatomical points of the male and female reproductive tracts.

8. List the origin and function of the major hormones, both male and female, involved in reproduction.
9. Describe the physical and behavioral expressions of estrus.
10. Appraise the anatomical and physiological aspects of conception, implantation, and gestation.
11. Critique various methods of pregnancy detection.
12. Describe the correct fetal position, delivery process, approximate timeline and maternal behaviors for a normal parturition.
13. Identify factors that may contribute to dystocia.
14. Explain the advantages and limitations of artificial insemination.
15. Analyze the significance and benefits of innovations in reproductive biotechnology, such as cloning and the splitting, sexing, storing and transfer of embryos.

## **Topics and Scope:**

### **I. Unit One: Basic Genetic Principles**

- A. Genes
- B. Genotype and phenotype
- C. Heritability

### **II. Unit Two: Mating Concepts**

- A. Purebred systems, inbreeding, linebreeding and outcrossing
- B. Heterosis
- C. Crossbreeding systems; two-breed, rotational, terminal, rotaterminal

### **III. Unit Three: Selection Methods**

- A. Artificial and natural selection
- B. Production and performance records
- C. Expected progeny difference

### **IV. Unit Four: Male Reproductive Anatomy and Physiology**

- A. Male reproductive tract
- B. Male hormones
- C. Behavioral aspects
- D. Semen evaluation

### **V. Unit Five: Female Reproductive Anatomy and Physiology**

- A. Female reproductive tract
- B. Female hormones
- C. Estrous cycles and ovulation
- D. Estrus expression

### **VI. Unit Six: Gestation and Parturition**

- A. Conception and implantation
- B. Fetal development
- C. Pregnancy detection/fetal examination
- D. Parturition

### **VII. Unit Seven: Artificial Insemination**

- A. Advantages and limitations
- B. Equipment and facilities
- C. Semen storage and quality
- D. Techniques utilized

### **VIII. Unit Eight: Reproductive Biotechnology**

- A. Embryo manipulation
- B. Cloning
- C. New innovations

## Assignment:

1. Reading assignments from instructor prepared materials of approximately 10 to 20 pages per week
2. Two to three written reports of two to five pages
3. Set up artificial insemination equipment
4. Two to five quizzes and final exam

## Methods of Evaluation/Basis of Grade:

**Writing:** Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

Written reports

Writing  
10 - 20%

**Problem Solving:** Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Setting up of equipment

Problem solving  
5 - 20%

**Skill Demonstrations:** All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

None

Skill Demonstrations  
0 - 0%

**Exams:** All forms of formal testing, other than skill performance exams.

Quizzes and exam: multiple choice, true/false, completion

Exams  
60 - 80%

**Other:** Includes any assessment tools that do not logically fit into the above categories.

None

Other Category  
0 - 0%

## Representative Textbooks and Materials:

Instructor prepared materials

Equine Reproductive Physiology, Breeding and Stud Management. 4th ed. Morel, Mina. CABI. 2015