

|   |                                |
|---|--------------------------------|
| Discipline: Agriculture   | Sub-discipline: Equine Science |
| General Course Title: <b>Equine Reproduction</b>  | Min. Units: <b>2 Semester</b>  |
| Proposed Suffix: <b>L</b>   |                                |
| <p>Course Description:<br/> Basic genetic principles with the study of the anatomical and physiological aspects of reproduction as they relate to equine reproduction, emphasizing genetic principles and reproductive aspects. Artificial insemination, embryo manipulation, and current innovations in productive biotechnology will also be examined. Laboratory recommended.</p>  |                                |
| Required Prerequisites or Co-Requisites <sup>1</sup>  |                                |
| Advisories/Recommended Preparation <sup>2</sup>   |                                |
| <p>Course Objectives: <i>At the conclusion of this course, the student should be able to:</i></p> <ul style="list-style-type: none"> <li>• Relate basic genetic principles to techniques in breeding selection and mating programs.</li> <li>• Evaluate advantages and disadvantages of common mating systems.</li> <li>• Compile the possible genetic and phenotypic ratios for two traits.</li> <li>• Analyze the impact of natural versus artificial insemination.</li> <li>• Identify anatomy and describe physiology of the male and female equine reproductive tract.</li> <li>• Describe the origin and functions of the major hormones, both male and female, and explain the role of each in reproduction.</li> <li>• Describe the correct fetal position, delivery process, approximate timeline and maternal behaviors for a normal parturition.</li> <li>• Distinguish the signs of gestation and the stages of parturition.</li> <li>• Analyze the advantages and disadvantages of artificial insemination.</li> <li>• Determine motility concentration and volume of semen in a given specimen.</li> <li>• Critique various methods of semen storage.</li> <li>• List and explain the correct use of specialized insemination tools.</li> <li>• Summarize latest developments in reproductive technology.</li> <li>• Examine and interpret latest regulations by breed associations regarding registration of foals.</li> </ul> |                                |
| <p>Course Content:</p> <ol style="list-style-type: none"> <li>1. Basic Genetic Principles <ol style="list-style-type: none"> <li>A. Genes</li> <li>B. Genotype and phenotype</li> <li>C. Heritability</li> <li>D. Application to breeding and mating</li> </ol> </li> <li>2. Mating Concepts <ol style="list-style-type: none"> <li>A. Purebred systems <ol style="list-style-type: none"> <li>1. Inbreeding</li> <li>2. Linebreeding</li> <li>3. Outcrossing</li> </ol> </li> <li>B. Heterosis</li> <li>C. Crossbreeding systems</li> </ol> </li> </ol> <p><b>Equine Reproduction<br/>(Content Continued)</b></p> <ol style="list-style-type: none"> <li>3. Natural vs. Artificial Mating <ol style="list-style-type: none"> <li>A. Percent conception</li> <li>B. Potential injury to mare and stallion</li> </ol> </li> </ol>  |                                |

<sup>1</sup> Prerequisite or co-requisite course need to be validated at the CCC level in accordance with Title 5 regulations; co-requisites for CCCs are the linked courses that must be taken at the same time as the primary or target course.

<sup>2</sup> Advisories or recommended preparation will not require validation but are recommendations to be considered by the student prior to enrolling.

- C. Number of mares covered
- 4. Male Reproductive Anatomy and Physiology
  - A. Male reproductive tract
  - B. Male hormones
  - C. Behavioral aspects
  - D. Semen evaluation
    - 1. Concentration, volume, and motility of viable sperm
    - 2. Correct morphology
    - 3. Techniques for optimizing visible sperm
      - a. extending
      - b. gentrification
- 5. Female Reproductive Anatomy and Physiology
  - A. Female reproductive tract
  - B. Female hormones
  - C. Estrous cycles and ovulation
  - D. Estrus expression
- 6. Gestation and Parturition
  - A. Conception and implantation
  - B. Fetal development
  - C. Pregnancy detection/fetal examination
    - 1. Ultra sound
    - 2. Palpation
  - D. Parturition
- 7. Artificial Insemination
  - A. Advantages and limitations
  - B. Equipment and facilities
  - C. Semen storage and quality
    - 1. Handling fresh raw semen
    - 2. Handling cooled or frozen semen
    - 3. Cooled semen containers and frozen semen containers
    - 4. Thawing techniques
    - 5. Methods of transporting
  - D. Techniques utilized
    - 1. Specialized insemination tools
    - 2. Methods of hormonal manipulation of estrous
  - E. Breed requirements and regulations
- 8. Reproductive Biotechnology
  - A. Embryo manipulation
    - 1. Super ovulation
    - 2. Embryo transfer
    - 3. Specific traits
  - B. New innovations

Laboratory Activities: Individual Laboratory Activities are designed to support course objectives.

Methods of Evaluation: Lecture  
 Comprehensive Quizzes and Exams  
 Written Critical Thinking Scenarios  
 Problem Analysis and Solution  
 Research and Term Papers

Methods of Evaluation: Laboratory  
 Laboratory Skill Validation by Observation  
 Laboratory Projects and Reports  
 Laboratory Research Projects and Reports  
 Laboratory Skill Practicum Exams

Typical Textbooks, Manuals, or Other Support Materials

Horses, 3<sup>rd</sup> edition. Evans, J. Warren. W.H. Freeman & Co., 2001.

Breeding Management & Foal Development. Wagoner, Don M. and Torbeck, Richard L. Equine Research, Inc., 1982.  
Equine Reproduction: Physiology, Breeding and Stud Management, 2nd edition. Morel, M.C.G. Davies. CABI, 2002.  
Illustrated Atlas of Clinical Equine Anatomy and Common Disorders of the Horse, Vol. II. Riegel, Ronald. J. and Hakola, Susan. Equistar Publications, 2003.

**Statewide Articulation: CPSLO-ASCI 333, CPP-AVS 434, UCD-ANS 127, other universities as lower division elective.**

FDRG Lead Signature:

Date:

Mark E. Bender, PhD CSU Stanislaus

[For Office Use Only]

**Internal Tracking Number**