01.0 **The internal structure of the hoof and lower leg.**

01.01 Diagram the tendons in the lower leg.

01.02 Describe the functions of the tendons and ligaments in the lower leg.

01.03 Diagram the ligaments in the lower leg.

01.04 Diagram the bones in the lower leg.

01.05 Diagram the internal and external parts of the hoof

01.06 Explain the movements of the lower leg.

01.07 Predict how the internal structure of the lower leg affects shoeing and trimming.

01.08 Discuss problems associated with improper or irregular trimming.

01.09 Discuss methods to correct poor feet or joints in the lower leg.

01.10 Demonstrate how to safely pick up a horse’s hind and front hoof.

01.11 Demonstrate how to properly trim a horse’s hoof.

02.0 **Correctly shoeing a horse**

02.01 Determine what the purpose of shoeing is.

02.02 Establish what type of shoe should be used based on what the horse will be doing.

02.03 Discuss different types of shoes and their respective purposes.

02.04 Properly prepare a horseshoe for shoeing using cold methods.

02.05 Properly prepare a horseshoe for shoeing using hot methods.

02.06 Demonstrate how to properly shoe a horse’s hoof.

02.07 Demonstrate the ability to appraise a finished shoeing or trim job.

03.0 **Determine the age of a horse.**

03.01 Discuss different methods to determine age in horses.

03.02 Demonstrate how to determine the age of various horses.

03.03 Discuss the importance of knowing the age of a horse.

03.04 Name four changes in teeth that are indicators of different ages.
03.05 Diagram a tooth to show the parts that change during the aging process
03.06 Describe the changes horses’ teeth exhibit during their lifetime
03.07 Show the temporary and permanent teeth of the horse and their approximate time of eruption
03.08 List four abnormal tooth conditions.
03.09 Show the proper method to handle a horse when checking teeth for age.
03.10 Diagram the different parts of the mouth in relation to a horse’s age.
03.11 Discuss the purpose of the canines in horses.
03.12 Determine the need (if any) of wolf teeth of a horse.

04.0 Buildings and Equipment
04.01 Discuss different types of material used in horse building construction.
04.02 Determine what type of facility will be constructed, and its uses.
04.03 Determine environmental factors affecting location of a horse facility.
04.04 Provide various locations suitable for horse buildings.
04.05 Assess methods of egress for horses in a building in the event of an emergency
04.06 Identify space requirements for the horse facility.
04.07 Identify the planning stages of construction
04.08 Discuss the importance of ventilation in a building housing for horses.
04.09 Name materials commonly used for stall floors
04.10 Describe requirements for a horse stall
04.11 Provide guidelines for the selection of feed and water facilities
04.12 Establish what methods will be used to store feed.
04.13 Provide methods for storage of tack to be used in relation to the type of riding discipline.
04.14 Discuss reasons for fencing horses and how to select the right fence
04.15 Name four types of fences

05.0 Business aspects Horse ownership
05.01 Appraise the cost of owning a horse.
05.02 Determine capital available for costs.
05.03 Create a budget for owning a horse.
05.04 Determine if the horse will be used for recreation, showing or both.
05.05 Establish whether outside horses will be boarded.
05.06 Create and implement an agreement between owner of facility and owner of horse for boarding, training, and breeding.
05.07 Establish where the horse will be kept.
05.08 Create methods in which capital may be established
05.09 Determine the amount and type of feed that will be fed.
05.10 Show where the feed will be purchased as well as stored.
05.11 Analyze a type of equine business and whether it will be profitable or not.
05.12 Examine the benefits and drawbacks to horse insurance.
05.13 Discuss the benefits and drawbacks to horse syndication.

06.0 Reproduction
06.01 Discuss breeding periods
06.02 List and discuss the major parts of the female reproductive tract
06.03 List and discuss the major parts of the male reproductive tract
06.04 Describe reproductive hormones during the estrous cycle
06.05 Recognize fertility problems
06.06 Explain gestation and parturition in horses
06.07 Discuss and demonstrate methods of artificial insemination and heat detection
06.08 Explain embryo transfer and the purposes associated with it.
06.09 Describe the management of the mare and stallion before, during and after the breeding season.
06.10 Describe the management of the mare, including care at parturition, nursing to weaning and growing to maturity
07.0 Breeding
07.01 Discuss how sex is determined.
07.02 Discuss the benefits or problems of Purebreeding, interbreeding, line breeding and crossbreeding.
07.03 Identify and relate the gross anatomical structures of the male reproductive system.
07.04 Describe the function of the parts of the male reproductive system.
07.05 Trace a spermatozoan in the male reproductive tract.
07.06 Explain why temperature is so critical to the testes and what three structures regulate it.
07.07 Define monorchid and criptorchid and explain how it may be determined.
07.08 Explain the cause of a scrotal hernia.
07.09 Indicate where sperm is mixed with the accessory fluids first to become semen.
07.10 Diagram and label how the parts of penis of the stallion in cross section.

08.0 Hormones and Puberty In the Male
08.01 Identify the major hormones of reproduction and their actions.
08.02 Distinguish between releasing hormones, hypophyseal, and gonadal hormones.
08.03 Relate action to specific male hormones and their sources.
08.04 Explain the factors affecting puberty and their interactions.
08.05 Relate age, size and weight to puberty.
08.06 Determine factors to be considered in selecting breeding stock.
08.07 Relate the four parts of the hypophysis to their function.
08.08 Diagram the hormonal sequence in the male, beginning and ending with ICSHRH.
08.09 List the effects of testosterone on secondary sex characteristics in the stallion.
08.10 Indicate the stallion-to-mare ratio when using young stallion for the first time compared to mature stallion.

09.0 Ejaculation and Semen Collection
09.01 Explain the process of mating.
09.02 Describe the composition of semen and the point of deposition in the female, and its composition.
09.03 Describe the passage of sperm through the tract during ejaculation.
09.04 List the males that have fractionated ejaculates.
09.05 List the advantages and disadvantages of the various methods of collecting semen.
09.06 Describe in detail the use of the artificial vagina and electroejaculator for collecting semen.

10.0 Breeding Soundness Evaluation
10.01 Describe and explain the criteria used for evaluating the outward signs of fertility in the male and female.
10.02 Describe how to evaluate the internal reproductive organs for breeding soundness.
10.03 Explain the value of the various factors used in evaluating semen.
10.04 List and describe the kinds of performance records which might be used when selecting breeding animals.
10.05 Explain how a pedigree might be used when selecting breeding stock.
10.06 Describe the traits that are desirable in selecting a herd sire and females for each species.

11.0 Semen Production, Processing, and Storage
11.01 Describe the efficacy of using fresh sperm in a breeding program.
11.02 Evaluate the various ways of processing sperm.
11.03 List the constituents of semen extender.
11.04 Calculate semen extension for processing fresh and frozen semen.
11.05 List the advantages and disadvantages of the various methods of packaging semen.
11.06 Explain which method of selecting a sire is the most effective.

12.0 Macroscopic Female Functional Anatomy
12.01 Trace the path of the ovum in the female reproductive tract.
12.02 List the anatomical differences of the reproductive systems among the species.
12.03 Describe the distinguishing external features of the ovaries of the cow, sow, ewe and mare
12.04 Identify the structures of the ovary and relate them to their functions
12.05 Classify the uteri of different species according to their configuration

13.0 Hormones and Puberty in the Female
13.01 List the hormones originating in the hypothalamus, hypophysis, and the gonads that are related to female reproduction
13.02 Identify the various hormones with their resulting target organs
13.03 Describe the four factors related to puberty
13.04 List the ages and ranges for the onset of puberty in the various species
13.05 Describe the effects of hormones, genetics, nutrition, and environment on the manifestation of puberty
13.06 Explain why one would want to shorten the prepubertal interval

14.0 Estrus and the Estrous Cycle
14.01 Describe the symptoms of estrus in the various species
14.02 Describe the meaning for the following: proestrus, estrus, metestrus, diestrus, and anestrus
14.03 Diagram the hormonal pathways used to initiate the activities of the various glands and organs in the body
14.04 Match specific hormones to their specific responses from target organs
14.05 Describe the growth of ovarian structures through an estrous cycle
14.06 Indicate the length of the estrous cycle
14.07 Describe when a mare is most likely to be receptive to the male
14.08 Describe the activity of the oviduct at the time of ovulation
14.09 Explain how the menstrual cycle differs from the estrous cycle

15.0 Ovulation Control
15.01 List the advantages and disadvantages of ovulation control
15.02 Describe the various compounds used for ovulation control for the mare
15.03 Distinguish between the action of progesterone, progestogens, and prostoglandins for ovulation control

15.04 Explain why two injections of prostoglandins are needed to control ovulation
15.05 Discuss the general approach to the superovulation of mares
15.06 Explain why interuturine (PGF 2 alpha a) is injected at a lower rate than intermuscular

16.0 Artificial Insemination
16.01 List the advantages and disadvantages of artificial insemination for the mare
16.02 Describe the differences between the various techniques of artificial insemination
16.03 List the various techniques that are used to check estrus in mares
16.04 Outline an AI program and its specific management for any class of livestock
16.05 Describe and explain the time of insemination to optimum conception
16.06 Explain the A.M. - P.M. inseminating rule
16.07 Indicate the best temperature to thaw frozen semen to be used immediately
16.08 Describe one method of restraint for mares during insemination

17.0 Fertilization and Embryo Transfer
17.01 Describe the mechanisms involved in sperm and ovum transport
17.02 List in order the barriers to sperm penetration of the ovum
17.03 Discuss the advantages and disadvantages of embryo transfer, in mares
17.04 Describe the importance of synchronization, condition, superovulation, and insemination to embryo transfer
17.05 Describe in outline form embryo transfer in any domestic species
17.06 Distinguish between 'good' and 'bad' eggs
17.07 Describe some of the problems of and need for continued research on embryo transfer
17.08 Explain how sperm moves so rapidly from the point of natural deposition to the point of fertilization
17.09 Indicate where fertilization takes place
17.10 Indicate how long it takes sperm to reach the point of fertilization in the mare
17.11 Explain where sperm is deposited in the normal copulation of the horses
17.12 Explain what is so critical about the synchronization of the donor and recipient for embryo transfer
17.13 Describe the nonsurgical approach to embryo transfer in the mare

18.0 **Gestation and Pregnancy Determination**
18.01 List the gestation lengths for mares
18.02 Describe the importance of progesterone and its source to maintenance of pregnancy
18.03 List the embryonic membranes of the embryo
18.04 List the major developments of the prenatal young
18.05 Describe the age to developmental periods of the embryo
18.06 Distinguish placentas by structure, shape
18.07 List reasons for pregnancy determination and outline methods for determining pregnancy

19.0 **Parturition and the Postpartum Period**
19.01 List and describe the factors influencing parturition
19.02 Describe the stages of parturition as they apply
19.03 List the problems that may arise during birth and methods of alleviating them
19.04 Relate and describe the postpartum period to ensuing estrous activity and conception
19.05 Explain what changes occur in progesterone and estrogen at parturition in the mare
19.06 Define terms associated with parturition and the postpartum period
19.07 Describe the birth process of a foal
19.08 Explain what ‘foal heat’ is