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| **Zoology** |
| **Units** | **ANFRE Standards** | **Vocabulary** | **Pacing** |
| **Unit 1: Animal and People**  | **Chapter 1:****The Importance of Animals** | Objectives:1. Explain the meaning of the animal industry.
2. Identify ways animals help people.
3. Identify trends in the animal industry.
4. Trace the domestication of animals.
5. Describe the role of science in animal production.
6. List the names of common animals based on sex classification and age
7. Explain the meaning of animal well-being.
8. Identify environmental concerns associated with animal products.

**Technical I.A.1 (Domestic Animal Production):**Evaluate the development and implications of animal origin, domestication and distribution.   | Animal DomesticationAnimal IndustryAnimal MarketingAnimal ProcessingAnimal ProductionAnimal SelectionsAnimal ServicesAnimal SuppliesAnimal Well-BeingBotanyBy-ProductsCastrationCompanion AnimalDairy CattleEnvironmentEuthanasiaFactory FarmHealthLife ScienceLivestockMeat AnimalsMohairNeuteringNutritionPoultryRationReproductionScienceSpayingVeterinary MedicineZoology |  |
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| **Zoology** |
| **Units** | **AFNRE Standards** | **Vocabulary** | **Pacing** |
| **Unit 2: Principles of Animal Science** | **Chapter 2:****Animals as Organisms** | Objectives: 1. Explain taxonomy and scientific names.
2. List and describe the major animal groups.
3. Identify the life processes of animals.
4. Explain the structural basis of animals.
5. Describe the anatomy of common animals.
6. Explain the structure and parts of bones.
7. Identify the major organ systems of animals and explain the physiology.

**Technical I.B.2 (Animal Anatomy & Physiology):**Apply principles of comparative anatomy and physiology to uses within various animal systems.**Pathway I.B.1 (Animal Anatomy & Physiology):**Examine animal developmental stages.**Pathway I.C.1 (Animal Anatomy & Physiology):**Describe basic functions of animal cells, organs and systems.**Pathway I.C.2 (Animal Anatomy & Physiology):**Explain how the components and systems of animal anatomy and physiology relate to the production and use of animals. | AnatomyBoneCartilageCell DivisionCell SpecializationCirculatory SystemConnective TissueDigestive SystemEpithelial TissueExcretory SystemGrowth PlateHomeostasisIntegumentary SystemInvertebrateKingdom AnimaliaLymphatic SystemMammalMarrowMeiosisMitosisMuscular SystemMuscular TissueNervous SystemNervous TissueOrganOrgan SystemPhysiologyReproductive SystemRespiratory SystemSkeletal SystemTissueVertebraeVertebrate |  |
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| **Zoology** |
| **Units** | **ANFRE Standards** | **Vocabulary** | **Pacing** |
| **Unit 2: Principles of Animal Science** | **Chapter 3:****Animal Nutrition and Feeding** | Objectives:1. List the major nutrients needs of animals and describe the purpose of each.
2. Contrast feed requirements with structure of digestive systems.
3. Describe the ways animal use nutrients.
4. Describe the types of feedstuffs.
5. Explain how animals are fed.
6. Describe how rations are formulated.

**Pathway I.A.3 (Domestic Animal Production):**Describe trends in the animal systems industry.**Technical I.D.1 (Animal Health & Nutrition):**Formulate feed rations to provide for the nutritional needs of animals. **Pathway I.B.2 (Animal Health & Nutrition):**Assess whether the nutritional requirements of a given animal are being met by recording performance and comparing feed variations. **Pathway I.B.3 (Animal Health & Nutrition):**Design a nutritional plan for a given animal with a clearly stated outcome.   | AbomasumAmino AcidsBalanced RationsCalorieCarbohydrateCarnivoreConcentrateDietFatFeedFeed AnalysisFeedstuffFiberForageFree AccessGrowthHerbivoreLactation rationLipidMaintenanceMineralNutrientNutritionOmasumOmnivorePalatabilityPearson Square MethodPermanent PastureProteinRationReproduction RationReticulumRoughageRumenScheduled Feeding | StomachSupplementTemporary PasturesVitamin |
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| **Units** | **AFNRE Standards** | **Vocabulary** | **Pacing** |
| **Unit 2: Principles of Animal Science** | **Chapter 4:****Animal Health** | Objectives:1. Explain animal health, normal behavior, and abnormal behavior.
2. Explain the impact of environment on animal health.
3. List and explain the economic losses caused by poor animal health.
4. Describe common disease and parasites of animals.
5. Explain how good health is maintained
6. Select practices for treating disease.

**Technical I.C.1 (Animal Health & Nutrition):**Prescribe and implement a prevention and treatment program for animal diseases, parasites and other disorders.  | AnaplasmosisAnthraxAntibioticsAntibodyBacteriaBalling GunBehaviorBiologicalBlacklegBrucellosisCoccidiosisColostrumContagious DiseaseDiseaseDisinfectantDose SyringeEctothermEndothermExternal ParasiteFoot and Mouth DiseaseFungiGrubsHealthHog CholeraImmunityImplantInjectionInternal ParasiteIsolationLeptospirosisLiceMastitisMedicationNoncontagious Disease | Oral MedicationParasitePharmaceuticalPreconditioningProtozoaRabiesSanitationShipping FeverSleeping SicknessTopical MedicationVirusVital Signs |
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| **Zoology** |
| **Units** | **AFNRE Standards** | **Vocabulary** | **Pacing** |
| **Unit 2: Principles of Animal Science** | **Chapter 5:****Animal Reproduction** | Objectives:1. Explain the role of animal reproduction.
2. Name and describe the functions of the major reproductive organs.
3. Describe the phases of the estrous cycle.
4. Explain the phases of reproductive development in the life of an animal.
5. Describe the role of animal reproduction technology.
6. Evaluate breeding animals.

**Technical I.E.1 (Animal Genetics & Reproduction):**Evaluate the male and female reproductive systems in selecting animals.**Technical I.E.2 (Animal Genetics & Reproduction):**Evaluate animals for breeding readiness and soundness.  | Accelerated LambingAnestrusArtificial InseminationBreedingCloningConceptionCopulationCrossbreedingEggEmbryoEmbryo TransferEstrous CycleEstrous SynchronizationEstrusFertilizationFetusGameteGenetic EngineeringGestationIncubationInseminationLactationNatural InseminationOvaryOvulationParturitionPerformance TestingPregnantProduction RecordsProgeny TestingPubertyPurebred AnimalReproductive EfficiencyScrotumSexed SemenSexual Reproduction | SpawningSpermTesticleVisual AppraisalZygote |
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| **Zoology** |
| **Units** | **AFNRE Standards** | **Vocabulary** | **Pacing** |
| **Unit 2: Principles of Animal Science** | **Chapter 6:****Animal Biotechnology** | Objectives:1. Explain biotechnology and how it is used.
2. Explain the role of genetics in animal productions and biotechnology.
3. Distinguish between organismic biotechnology and molecular biotechnology.
4. Describe molecular biotechnology, including genetic engineering and recombinant DNA processes in animals.
5. Explain examples of organismic biotechnology.
6. Identify issues associated with animal biotechnology.

**Pathway I.A.4 (Domestic Animal Production):**Recognize the historical, social, cultural and potential applications of biotechnology in the animal systems industry.  | AlleleAnimal BiotechnologyAtomBiotechnologyChromosomeDNADominant TraitDNA SequencingGeneGene TransferGenetic CodeGeneticsGenomeGenotypeHeredityHeterozygousHomozygousMicroinjectionMolecular BiotechnologyMoleculeMutationOocyteOocyte TransferOrganismic BiotechnologyParticle InjectionPhenotypeProbabilityPunnett SquareRecessive TraitRecombinant DNASuperovulationSynthetic BiologyTransgenic Animal |  |
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| **Units** | **Common Core Standards** | **Vocabulary** | **Pacing** |
| **Unit 3: Food Animal Technology** | **Chapter 9:****Swine Production** | Objectives:1. Explain the importance of swine production.
2. Describe swine as an organism.
3. List and describe common breeds of swine.
4. Explain the possibilities of pork productions.
5. Describe pork production systems.
6. Explain important management practices in swine production.
7. List nutritional requirements of swine.
8. Explain additives and withdrawal time.
9. Explain health management practices for swine.
10. Describe facility and equipment needs for swine.
11. Discuss the “Pork Producer Code of Practice.”

**Pathway I.B.1 (Animal Anatomy & Physiology):**Examine animal developmental stages.**Technical I.F.1 (Animal Anatomy & Physiology):**Demonstrate safe animal handling and management techniques. **Technical I.B.3 (Animal Genetics & Reproduction):**Select animals for specific purposes and maximum performance based on anatomy and physiology. **Technical I.E.1 (Animal Genetics & Reproduction):**Evaluate the male and female reproductive systems in selecting animals.**Technical I.E.2 (Animal Genetics & Reproduction):**Evaluate animals for breeding readiness and soundness. **Technical I.A.1 (Domestic Animal Production):**Evaluate the development and implications of animal origin, domestication and distribution. **Technical I.B.1 (Domestic Animal Production):**Classify animals according to hierarchical taxonomy and agriculture use. **Technical I.G.1 (Domestic Animal Production):**Design animal housing, equipment and handling facilities for the major systems of animal production.   | AdditiveBarrowBoarContract ProductionFarrowingFeeding PigFinishingGiltMeat-Type-HogNeedle TeethPedigreePigletPorcine SomatotropinPorcine Stress SyndromeProbeProlificSowSpecific Pathogen FreeTail DockingTypeUltrasonicsWithdrawal Time |  |
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| **Zoology** |
| **Units** | **ANFRE Standards** | **Vocabulary** | **Pacing** |
| **Unit 3: Feed Animal Technology** | **Chapter 11:****Dairy Production** | Objectives:1. Describe the dairy industry.
2. Describe dairy cattle as organisms.
3. Explain dairy conformation and type.
4. Identify common breeds of dairy cattle.
5. Explain important management practices in dairy production.
6. Explain reproduction in dairy cattle.
7. Describe dairy feeding and nutrition.
8. Describe how the environment is modified for dairy cattle.
9. Explain health management practices with dairy cattle.
10. Describe facility and equipment needs with dairy cattle.
11. Identify general considerations is showing dairy cattle.

**Pathway I.B.1 (Animal Anatomy & Physiology):**Examine animal developmental stages.**Technical I.F.1 (Animal Anatomy & Physiology):**Demonstrate safe animal handling and management techniques. **Technical I.B.3 (Animal Genetics & Reproduction):**Select animals for specific purposes and maximum performance based on anatomy and physiology. **Technical I.E.1 (Animal Genetics & Reproduction):**Evaluate the male and female reproductive systems in selecting animals.**Technical I.E.2 (Animal Genetics & Reproduction):**Evaluate animals for breeding readiness and soundness. **Technical I.A.1 (Domestic Animal Production):**Evaluate the development and implications of animal origin, domestication and distribution. **Technical I.B.1 (Domestic Animal Production):**Classify animals according to hierarchical taxonomy and agriculture use.  **Technical I.G.1 (Domestic Animal Production):**Design animal housing, equipment and handling facilities for the major systems of animal production.   | AlveoliAnimal ModelCold HousingCullingDairy Herd Improvement Program (DHI)Dry CowFunctional TypeHomogenizationImmunoglobulinsKetosisLinear EvaluationsManagement Intensive GrazingMastitisMetabolic DisorderMilk FeverMilking ParlorNutrient DensePasteurizationPredicted Transmitting AbilityProgenySelectionTotal Mixed Ration (TMR)Type Production Index (TPI)UdderWarm Housing |  |
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| **Zoology** |
| **Units** | **ANFRE Standards** | **Vocabulary** | **Pacing** |
| **Unit 4: Pleasure and Draft Animal Technology** | **Chapter 14:****Horses** | Objectives:1. Describe horses as organisms.
2. Distinguish between the types of light horses.
3. Explain breeding practices with horses.
4. Discuss the nutritional and feed requirements of horses.
5. Explain important health management practices with horses.
6. Describe facility and equipment requirements of horses.
7. Identify and describe equation skills.

**Pathway I.B.1 (Animal Anatomy & Physiology):**Examine animal developmental stages.**Technical I.F.1 (Animal Anatomy & Physiology):**Demonstrate safe animal handling and management techniques. **Technical I.B.3 (Animal Genetics & Reproduction):**Select animals for specific purposes and maximum performance based on anatomy and physiology.  **Technical I.E.1 (Animal Genetics & Reproduction):**Evaluate the male and female reproductive systems in selecting animals.**Technical I.E.2 (Animal Genetics & Reproduction):**Evaluate animals for breeding readiness and soundness. **Technical I.A.1 (Domestic Animal Production):**Evaluate the development and implications of animal origin, domestication and distribution.  **Technical I.B.1 (Domestic Animal Production):**Classify animals according to hierarchical taxonomy and agriculture use. **Technical I.G.1 (Domestic Animal Production):**Design animal housing, equipment and handling facilities for the major systems of animal production.  | Draft HorseDriving HorseEquitationFarrierFillyFloatingFoalFoalingFrogGaitGallopGeldingHandHorsemanshipHunting and Jumping HorseJogLight HorseLopeMarePlugPolo MountPonyRacehorseRiding HorseStallionStock HorseStud HorseWalk |  |
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| **Zoology** |
| **Units** | **ANFRE Standards** | **Vocabulary** | **Pacing** |
| **Unit 4: Pleasure and Draft Animal Technology** | **Chapter 16:****Dogs** | Objectives:1. Describe the biology of a dog.
2. List and describe the classes of dogs.
3. Identify factors to considered in selecting a dog.
4. Describe reproductive practices with dogs.
5. Describe nutrition and feeding of dogs.
6. Identify important health practices with dogs.
7. Describe facility and equipment needs of dogs.
8. Identify grooming practices with dogs.
9. Assess sanitation and well-being practices with dogs.

**Pathway I.B.1 (Animal Anatomy & Physiology):**Examine animal developmental stages.**Technical I.F.1 (Animal Anatomy & Physiology):**Demonstrate safe animal handling and management techniques. **Technical I.B.3 (Animal Genetics & Reproduction):**Select animals for specific purposes and maximum performance based on anatomy and physiology. **Technical I.E.1 (Animal Genetics & Reproduction):**Evaluate the male and female reproductive systems in selecting animals.**Technical I.E.2 (Animal Genetics & Reproduction):**Evaluate animals for breeding readiness and soundness.  **Technical I.A.1 (Domestic Animal Production):**Evaluate the development and implications of animal origin, domestication and distribution.  **Technical I.B.1 (Domestic Animal Production):**Classify animals according to hierarchical taxonomy and agriculture use. **Technical I.G.1 (Domestic Animal Production):**Design animal housing, equipment and handling facilities for the major systems of animal production.  | BitchGroomingHerding DogHoundMixed-Breed DogNail BedNon-Sporting BreedOrphaned PuppySporting DogTerrier ClassToy BreedTrainingWeaningWhelpWhelping BoxWorking Dog |  |
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| **Zoology** |
| **Units** | **ANFRE Standards** | **Vocabulary** |
| **Unit 4: Pleasure and Draft Animal Technology** | **Chapter 18:****Birds, Rodents, and Reptiles** | Objectives: 1. Describe the kinds of companion birds and their management.
2. Describe the kinds of companion rodent and their management.
3. Describe the kinds of companion reptiles and their management.
4. Describe the kinds of rabbit and their management.
5. Identify other companion animals and describe their keeping.

**Pathway I.B.1 (Animal Anatomy & Physiology):**Examine animal developmental stages.**Technical I.F.1 (Animal Anatomy & Physiology):**Demonstrate safe animal handling and management techniques. **Technical I.B.3 (Animal Genetics & Reproduction):**Select animals for specific purposes and maximum performance based on anatomy and physiology. **Technical I.E.1 (Animal Genetics & Reproduction):**Evaluate the male and female reproductive systems in selecting animals.**Technical I.E.2 (Animal Genetics & Reproduction):**Evaluate animals for breeding readiness and soundness. **Technical I.A.1 (Domestic Animal Production):**Evaluate the development and implications of animal origin, domestication and distribution. **Technical I.B.1 (Domestic Animal Production):**Classify animals according to hierarchical taxonomy and agriculture use. **Technical I.G.1 (Domestic Animal Production):**Design animal housing, equipment and handling facilities for the major systems of animal production.  | AmphibianAviaryBirdBird CageBirdkeepingDiurnalFledglingGreenfoodGritHutchNocturnalQuillReptileRodentSolitary |

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| **Zoology** |
| **Units** | **ANFRE Standards** | **Vocabulary** |
| **Unit 4: Pleasure and Draft Animal Technology** | **Chapter 20:****Wildlife Animals** | Objectives:1. Explain the importance of wildlife animals.
2. Classify the major game animal.
3. Explain species endangerment and practices to prevent endangerment.
4. Explain important practices in wildlife management.
5. List Important considerations for sport enthusiasts.
6. Describe ways to enjoy wildlife.

**Pathway I.B.1 (Animal Anatomy & Physiology):**Examine animal developmental stages.**Technical I.F.1 (Animal Anatomy & Physiology):**Demonstrate safe animal handling and management techniques. **Technical I.B.3 (Animal Genetics & Reproduction):**Select animals for specific purposes and maximum performance based on anatomy and physiology. **Technical I.E.1 (Animal Genetics & Reproduction):**Evaluate the male and female reproductive systems in selecting animals.**Technical I.E.2 (Animal Genetics & Reproduction):**Evaluate animals for breeding readiness and soundness. **Technical I.A.1 (Domestic Animal Production):**Evaluate the development and implications of animal origin, domestication and distribution.  **Technical I.B.1 (Domestic Animal Production):**Classify animals according to hierarchical taxonomy and agriculture use. **Technical I.G.1 (Domestic Animal Production):**Design animal housing, equipment and handling facilities for the major systems of animal production.   | Animal WelfareBiodiversityBirdingCarrying CapacityEndangered SpeciesGameHuntingLimiting FactorNicheNon-Game AnimalPeltTerritoryTrappingUrbanization |