

# Agriculture, Food and Natural Resources: Animal Science and Services 4: Grades 9-12

Apply animal health practices. The student will be able to: 21.0

- 1 Administer prescribed oral medications. 21.1
- 2 Locate injection points of selected animals. 21.2
- 3 Sterilize instruments and supplies. 21.3
- 4 Interpret and follow directions on medications and animal health aids, including withdrawal periods. 21.4
- 5 Dip, spray, or dust animals for external parasites (under supervision). 21.5
- 6 Dispose of empty chemical and medical containers as prescribed. 21.6
- 7 Store medications and chemicals safely and securely. 21.7
- 8 Dispose of biomedical waste and by products (needles, scalpel blades, medicines, etc.). 21.8

Maintain equipment and facilities. The student will be able to: 22.0

- 1 Clean and disinfect pens, cages, feeders, waterers, trailers, and other equipment according to Best Management Practices. 22.1
- 2 Dispose of animal residue and waste according to Best Management Practices. 22.2
- 3 Prepare and maintain equipment and instruments. 22.3
- 4 Repair and maintain pens, cages and other facilities and structures. 22.4
- 5 Create a clean, sanitary, and healthy environment for animals. 22.5

Operate, maintain, and repair machinery and equipment. The student will be able to: 23.0

- 1 Use equipment-operator and repair manuals. 23.1
- 2 Operate, service, and maintain equipment. 23.2
- 3 Maintain records of equipment maintenance and repair. 23.3

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**4 Prepare equipment for storage.** 23.4

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**5 Demonstrate safety practices in operating machinery and equipment.** 23.5

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**Investigate emerging technologies in Animal Science. The student will be able to:** 24.0

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**1 Identify new technologies in animal science.** 24.1

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**2 Research emerging technologies and determine their impact on animal industry and society.** 24.2

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**Apply scientific principles in the selection and breeding of animals. The student will be able to:** 25.0

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**1 Compare and contrast the use of genetically superior animals in the production of animals and animal products.** 25.1

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**2 Identify and categorize natural and artificial breeding methods (e.g., natural breeding, artificial insemination, estrous synchronization, flushing, cloning, etc.).** 25.2

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**3 Select animal breeding methods based on reproductive and economic efficiency.** 25.3

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**4 Examine the use of quantitative breeding values (e.g., EPDs, Performance records, pedigrees) in the selection of genetically superior breeding stock.** 25.4

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**5 Compare and contrast quantitative breeding value differences between genetically superior animals and animals of average genetic value.** 25.5

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**6 Select and assess animal performance based on quantitative breeding values for specific characteristics.** 25.6

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**7 Identify and summarize the advantages and disadvantages of major reproductive management practices, including estrous synchronization, superovulation, flushing and embryo transfer (e.g., cost, labor, equipment, etc.).** 25.7

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**8 Analyze the processes of major reproductive management practices, including estrous synchronization, superovulation, flushing and embryo transfer.** 25.8

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**9 Create and evaluate plans and procedures for estrous synchronization, superovulation, flushing, embryo transfer and other reproductive management practices.** 25.9

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**10 Calculate the potential economic benefits of natural versus artificial breeding methods.** 25.10

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**11 Analyze the materials, methods, and processes of artificial insemination.** 25.11

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**12 Demonstrate artificial insemination techniques.** 25.12

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**Maintain and analyze records. The student will be able to:** 26.0

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**1 Maintain and analyze animal records.** 26.1

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**2 Maintain machinery and equipment records.** 26.2

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**3 Maintain and analyze basic business records (inventory, depreciation, receipts, and expenses) using computer applications.** 26.3

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**4 Prepare and maintain Supervised Agricultural Experience (SAE) records.** 26.4

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**Manage pasture and forage crops. The student will be able to:** 27.0

**1 Compare pasture, forage and feed crop production and harvesting systems.** 27.1

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**2 Assist in determining pasture and forage needs.** 27.2

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**3 Take a forage sample and interpret results.** 27.3

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**4 Determine range and pasture quality.** 27.4

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**5 Assist in the development of a plan for the rotation of fields, pens and pastures.** 27.5

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**Understand the relationship of animal production and the environment. The student will be able to:** 28.0

**1 Evaluate the relationship between animal agriculture on the environment.** 28.1

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**2 Outline methods of balancing the effects of animal agriculture on the environment.** 28.2

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**3 Describe BMPs (Best Management Practices) to balance the impact of animal agriculture on the environment.** 28.3

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**4 Determine positive effects of animal agriculture on the environment.** 28.4

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**Evaluate the effects of environmental conditions on animals. The student will be able to:** 29.0

**1 Identify optimal environmental conditions for animals.** 29.1

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**2 Describe the effects of environmental conditions on animal populations and performance.** 29.2

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**3 Establish and maintain favorable environmental conditions for animal growth and performance.** 29.3

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**Identify and interpret environmental issues and regulations pertaining to animal industry. The student will be able to:** 30.0

**1 Determine environmental issues pertinent to your area.** 30.1

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**2 Calculate the economic impact of environmental regulations on the industry.** 30.2

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**3 Discuss emerging technologies and determine their effectiveness as related to environmental quality.** 30.3

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**4 Evaluate an animal facility to determine if standards have been met.** 30.4

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**5 Design a facility that meets standards for the legal, safe, ethical, and efficient production of animals.** 30.5

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