

# Agriscience Principles and Applications (2014)

Adopted 2014

## Animal Nutrition and Digestion

- a. Describe the functions of the animal body systems and system components.<ul><li>digestion</li><li>physiology</li></ul> AS.02.02.06.A

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- a. Compare and contrast common types of feedstuffs and the roles they play in the diets of animals. AS.04.01.01.A

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- a. Explain the importance of a balanced ration for animals.<ul><li>nutrient requirements</li><li>deficiencies</li></ul> AS.04.01.02.A

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- b. Appraise the adequacy of feed rations using data from the analysis of feedstuffs, animal requirements and performance.<ul><li>Pearson square</li></ul> AS.04.01.02.B

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- a. Explain the purpose and benefits of feed additives and growth promotants in animal production. AS.04.02.01.A

## Animal Health

- a. Explain methods of determining animal health and disorders. AS.03.01.01.A

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- b. Perform simple health-check evaluations on animals.<ul><li>signs and symptoms of animal health</li></ul> AS.03.01.01.B

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- a. Identify common diseases, parasites and physiological disorders that affect animals. AS.03.01.02.A

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- b. Diagnose illnesses and disorders of animals based on symptoms and problems caused by diseases, parasites and physiological disorders. AS.03.01.02.B

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- a. Explain characteristics of causative agents and vectors of diseases and disorders in animals. AS.03.01.03.A

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- b. Evaluate preventive measures for controlling and limiting the spread of diseases, parasites and disorders among animals.<ul><li>health management practices</li><li>medications/vaccinations</li><li>medication administration tools & methods</li></ul> AS.03.01.03.B

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- a. Identify and describe zoonotic diseases. AS.03.01.05.A

## Plant Structures and Functions

- a. Diagram a typical plant cell and identify plant cell organelles and their functions.** [PS.01.02.01.A](#)

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- a. Identify the components, the types and the functions of plant roots.** [PS.01.02.02.A](#)

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- b. Identify root tissues and explain the pathway of water and nutrients into and through the root tissues.** [PS.01.02.02.B](#)

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- a. Identify the components and functions of plant stems.** [PS.01.02.03.A](#)

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- a. Discuss leaf morphology and the functions of leaves.** [PS.01.02.04.A](#)

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- a. Identify the components of a flower, the functions of a flower and the functions of flower components.** [PS.01.02.05.A](#)

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- a. Explain the functions and components of seeds and fruit.** [PS.01.02.06.A](#)

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- a. Explain the basic process of photosynthesis and its importance to life on Earth.** [PS.01.03.01.A](#)

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- a. Identify the five groups of naturally occurring plant hormones and synthetic plant growth regulators.** [PS.01.03.04.A](#)

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- b. Identify the plant responses to plant growth regulators and different forms of tropism.** [PS.01.03.04.B](#)

## Plant Health

- a. Identify the essential nutrients for plant growth and development and their major functions.** [PS.02.03.01.A](#)

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- a. Identify fertilizer sources of essential plant nutrients, explain fertilizer formulations and describe different methods of fertilizer application.** [PS.02.03.04.A](#)

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- b. Diagram the process of plant fertilization.** [PS.03.01.01.B](#)

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- a. Identify types of plant pests and disorders.** [PS.03.03.01.A](#)

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- b. Identify major local weeds, insect pests and infectious and noninfectious plant diseases.** [PS.03.03.01.B](#)

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- a. Describe damage caused by plant pests and diseases.** [PS.03.03.02.A](#)

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- a. Describe pest control strategies associated with integrated pest management.** [PS.03.03.03.A](#)

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- b. Describe types of pesticide controls and formulations.** [PS.03.03.03.B](#)

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- a. Explain risks and benefits associated with the materials and methods used in plant pest management.** [PS.03.03.04.A](#)

## Plant and Animal Genetics

- a. Explain the structures of DNA and RNA and how genotype influences phenotype. [BS.02.05.02.A](#)

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- a. Explain biological, social, agronomic and economic reasons for genetic modification of eukaryotes. [BS.03.01.01.A](#)

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- a. Describe the selective plant breeding process.
  - hybridization[BS.03.03.01.A](#)

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- a. Explain genetic inheritance in agricultural animals.
  - Punnett square
  - dominant and recessive
  - phenotype and genotype genes
  - EPDs[AS.05.03.01.A](#)

## Food Science and Technology

- a. Discuss the history and describe and explain the components (e.g., processing, distribution, byproducts) of the food products and processing industry. [FPP.01.01.01.A](#)

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- b. Evaluate changes and trends in the food products and processing industry. [FPP.01.01.01.B](#)

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- a. Identify and explain environmental and safety concerns about the food supply. [FPP.01.01.02.A](#)

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- a. Explain techniques and procedures for safe handling of food products. [FPP.02.03.01.A](#)

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- a. Identify quality and yield grades of food products. [FPP.04.01.01.A](#)

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- b. Discuss factors that affect quality and yield grades of food products. [FPP.04.01.01.B](#)

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- a. Explain methods and materials for processing foods for sale as fresh-food products. [FPP.04.03.02.A](#)

## Natural Resources

- b. Identify the physical qualities of the soil that determine its use for environmental service systems. [ESS.03.02.03.B](#)

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- a. Explain the importance of recycling. [ESS.04.02.06.A](#)

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- a. Identify natural resources.
  - history
  - types/classifications
  - natural and man disturbances[NRS.01.01.01.A](#)

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- b. Differentiate between renewable and nonrenewable natural resources.
  - conservation vs. preservation
  - national and global issues[NRS.01.01.01.B](#)

## Presentation Development

- a. Use basic technical and business writing skills.<ul><li>topic selection</li><li>manuscript parts and outline</li><li>researching</li><li>bibliography</li></ul> CS.03.01.01.A
- b. Deliver a business presentation for a peer group (e.g. class presentation).<ul><li>visual aids</li><li>presentation techniques</li><li>answering questions</li></ul> CS.03.01.03.B

## Financial Literacy

- a. Maintain production and agribusiness records.<ul><li>checkbooks and financial accounts</li></ul> ABS.03.01.01.A
- a. Budget resources, as applied to the AFNR business, including capital, human, financial, and time.<ul><li>income and budgets</li><li>taxes</li></ul> ABS.04.01.01.A
- b. Manage assets, including credit, for agribusiness goal achievement.<ul><li>banks financial services</li><li>savings and investments</li><li>borrowing money</li><li>using credit</li></ul> ABS.04.01.01.B
- a. Identify financial concepts associated with production and profit.<ul><li>income and budgets</li></ul> ABS.04.01.02.A
- a. Determine the meaning and importance of risk and uncertainty with AFNR enterprises.<ul><li>insurance and managing risk</li></ul> ABS.07.04.01.A
- b. Describe alternative approaches to reducing risk, including the use of insurance for product liability, property, production or income loss and for personnel life and health.<ul><li>insurance and managing risk</li><li>bankruptcy</li></ul> ABS.07.04.01.B

## Welding, Brazing and Cutting

- a. Use proper safety practices/personal protective equipment. CS.06.02.01.A
- a. Demonstrate the importance of safety, health, and environmental practices in the workplace.<ul><li>shop rules</li><li>fire prevention</li></ul> CS.06.03.01.A
- a. Handle chemicals and equipment in a safe and appropriate manner.<ul><li>common hazards</li><li>welding safety</li></ul> CS.07.04.02.A
- a. Identify standard tools, equipment, and safety procedures related to a specific task.<ul><li>welding tools and equipment</li><li>cutting tools and equipment</li></ul> CS.08.01.01.A
- a. Follow operating instructions related to specific tools and equipment needed to complete a task.<ul><li>operating a welder and cutting torch</li></ul> CS.08.01.02.A
- a. Use the appropriate procedures for the use and operation of specific tools and equipment.<ul><li>operating a welder and cutting torch</li></ul> CS.08.02.01.A

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- b. Distinguish welding processes, positions and materials preparation.**
  - welding methods and equipment
  - cutting equipment, gasses and process PST.04.04.07.B
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**Land Measurement and Descriptions**

- a. Explain the importance of surveying and mapping for environmental service systems.**
  - determining land area
  - legal land descriptions ESS.06.01.01.A
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- b. Locate natural resources using a land survey and geographic coordinate system.**
  - determining land area
  - GPS and GIS NRS.02.02.01.B