Correlation Matrix

Principles of Agriculture, Food, and Natural Resources

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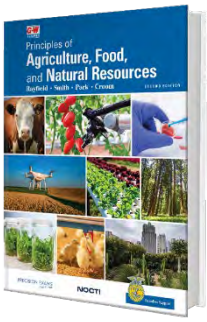
aligned to the

AEST Agriculture Associate Certification



AGRISCIENCE FOUNDATIONS		
STANDARD		**TEXT LOCATION**
1	Students should know the impact that agriculture has on the local, state, national and global economy. This includes statistics related to the number of farmers, how much food farmers produce, careers in agriculture, etc. Sample Questions: What metal revolutionized agriculture? For every dollar spent on food, what percent of that dollar is returned to the producer?	Lesson 1.1 Agriculture's Impact on Society p4 Lesson 1.2 History of Agriculture, Food Systems, and Natural Resources p16 Lesson 9.1 Food Production Systems p32
2	Students should be able to identify potential accidents in agriculture and know how to prevent accidents through the use of personal safety equipment and clothing. Sample Question: When discharging a fire extinguisher, how far away should you be positioned from the fire?	Lesson 4.1 Occupational Safety and Health p136 Lesson 4.2 Shop and Lab Safety p148 Lesson 4.3 Farm and Work Safety p165
	Students should know basic pesticide safety information including how to read a Material Safety Data Sheet (MSDS) and how to properly dispose of hazardous waste materials. Sample Question: What is another term for the trade name of a pesticide?	Lesson 4.1 Occupational Safety and Health p136 Lesson 4.2 Shop and Lab Safety p148 Lesson 4.3 Farm and Work Safety p165
3	Students should be able to use common laboratory equipment and employ scientific measurement skills. Sample Question: Approximately how many grams are equal to one pound?	Lesson 5.1 Agriscience and the Scientific Method p192 Lesson 5.2 Practical Science in Agriculture p204 Lesson 5.3 Biotechnology in Agriculture p214
	Students should be able to identify the parts and functions of plant and animal cells as well as describe the phases of cell reproduction. Sample Question: What is mitosis?	Lesson 13.1 Plant Anatomy and Physiology p686 STEM Connection: Genetics in Agriculture p217
	Students should be able to carry out agriscience research including interpreting, analyzing and reporting data. Sample Question: What are the steps of the Scientific Method?	Lesson 5.1 Agriscience and the Scientific Method p192 Lesson 4.2 Shop and Lab Safety p148
	Students should be familiar with DNA, genetic applications in agriscience and advances in biotechnology.	Lesson 5.3 Biotechnology in Agriculture p214 STEM Connection: Genetics in Agriculture p217

	Sample Question: What type of breeding involves choosing specific parents to desirable characteristics in the offspring?	STEM Connection: DNA and Genetic Engineering p218
4	Students should know how different climatic and geological activity influences agriculture. Sample Question: The buildup of heat caused by radiant energy being trapped in the earth's atmosphere is known as what?	Chapter 14 Environmental Systems Impacting Agriculture Lesson 14.1 Ecosystems p778 Lesson 14.2 Ecological Cycles p791 Lesson 14.3 Influence of Climate on Agriculture p809 Lesson 14.4 Animals, Plants, and Geography p825
	Students should be able to describe ecosystems and environmental resources related to agriculture production. Sample Question: Air is what percent oxygen?	Lesson 14.1 Ecosystems p778 Lesson 14.2 Ecological Cycles p791 Lesson 14.3 Influence of Climate on Agriculture p809 Lesson 14.4 Animals, Plants, and Geography p825 Lesson 15.2 Soil Formation and Properties p855 Lesson 15.3 Hydrological Cycles p874
	Students should be able to identify regulatory agencies, apply Best Management Practices and conservation practices related to agriculture and natural resources. Sample Question: What is meant by crop rotation?	Lesson 15.1 History of Conservation p844 Lesson 15.2 Soil Formation and Properties p855 Lesson 15.3 Hydrological Cycles p874 Lesson 15.4 Water Quality p888 Lesson 15.5 Conservation Practices in Agriculture p901
5	Students should know the following concepts related plant science/growth: • Plant categories • Plant parts • Photosynthesis • Respiration • Reproduction • Nutrients required for growth Sample Question: What is the series of processes in which light energy is converted into simple sugar called?	Lesson 13.1 Plant Anatomy and Physiology p686
	Students should be able to analyze a fertilizer label. Sample Question: What do the three numbers found on a fertilizer label represent?	Lab Workbook
	Students should be familiar with agricultural pests and pest control solutions. Sample Question: What type of pesticide is used to kill insects?	Pest Control p715-718; p728-729; p736; p747-749 Weed, Insect, and Disease Control p753 Maintaining Health of Floriculture Plants p764-766 Landscape Disease and Pests p769-770 Pests and Disease p818 Invasive Species p831-835
6	Students should know the following concepts related animal science: • Animal categories (use, type, breed, scientific classification)	Lesson 4.1 Occupational Safety and Health p136 Lesson 4.3 Farm and Work Safety p165 Lesson 9.3 Animal Feeds and Feeding p471

	• Terminology • Internal & External anatomy • Animal management • Animal health • Animal safety Sample Question: What is the name of the class of animals that have a stomach with four compartments? Sample Question: Where is an intramuscular injection made?	Lesson 10.1 The Beef Industry p492 Lesson 10.2 The Dairy Industry p509 Lesson 10.3 The Equine Industry p524 Lesson 11.1 The Poultry Industry p552 Lesson 11.2 The Swine Industry p577 Lesson 11.3 The Sheep Industry p590 Lesson 11.4 The Goat Industry p603 Lesson 12.1 Companion Animals p618 Lesson 12.3 Nontraditional Animal Industries p656
	Students should be aware of animal welfare issues. Sample Question: What is the difference between animal welfare and animal rights?	Owner Obligations and Benefits p622-625
	Students should know the food, fiber and by-products provided by animals. Sample Question: What are some common by-products of the animal industry?	Lesson 12.4 By-Products from Animal Industries p671 Lesson 10.1 The Beef Industry p492 Lesson 10.2 The Dairy Industry p509 Lesson 11.1 The Poultry Industry p552 Lesson 11.2 The Swine Industry p577 Lesson 11.3 The Sheep Industry p590 Lesson 11.4 The Goat Industry p603 Lesson 12.3 Nontraditional Animal Industries p656
7	Students should be able select, service and maintain and use agriscience tools, equipment and instruments. Sample Question: When gripping wood, metal or plastic what type of tool would you use?	Lesson 7.3 Hand Tools p297 Lesson 7.4 Power Tools and Equipment p318 Lesson 7.5 Agricultural Design and Fabrication p334 Lesson 7.6 Power Systems p346 Lesson 7.7 Principles of Electricity p358 Lesson 7.8 Principles of Plumbing p378
	Students should know various physical science principles as applied in mechanical applications including but not limited to: • levers • pulleys • hydraulics • internal combustion Sample Question: A round device attached to a shaft and driven by a belt is know as what?	STEM Connection: Lift and Drag p269 Lesson 7.6 Power Systems p346 STEM Connection: How an Internal Combustion Engine Works p348
	Students should be able to solve mathematical problems in agriscience including but not limited to: • distance • area • volume • proportion • percentage	Lesson 8.2 Practical Mathematics in Agriculture p418

	Sample Question: What is the U.S. standard unit of measurement when measuring the length of a piece of wood?	
8	Students should know how to develop, implement and maintain an SAE, including using a record keeping system. Sample Question: A student whose Supervised Agricultural Experience (SAE) involves owning their own herd of cattle has what type of SAE?	Lesson 3.1 Experiential Learning through Agriculture (SAE) p92
	Students should understand oral communication, written communication, nonverbal communication, and good listening skills. Sample Question: What are the three parts of a speech?	Lesson 2.1 Building Leadership Skills through Agriculture p48 Lesson 2.2 Communication Skills in the Agricultural Industry p61 Lesson 2.3 Conducting Meetings in Agricultural Organizations p75
9	Students should be able to identify and describe leadership characteristics and opportunities to acquire leadership skills. Sample Question: What is another word for integrity?	Lesson 2.1 Building Leadership Skills through Agriculture p48 Lesson 2.3 Conducting Meetings in Agricultural Organizations p75
	Students should be able to conduct meetings using correct parliamentary procedure. Sample Question: What does two taps of the gavel mean?	Lesson 2.3 Conducting Meetings in Agricultural Organizations p75
	Students should be aware of opportunities available through the National FFA Organization. Sample Question: What is the highest degree that the FFA can bestow upon a member?	Lesson 3.1 Experiential Learning through Agriculture (SAE) p92 Lesson 3.2 Your Career in Agriculture p110
10	Students should be familiar with food safety and handling practices including, but not limited to: • Personal Protective Equipment including types and uses • Common food safety practices including hygiene practices • Safe handling of food products including eggs, meats, frozen foods, canned foods, and vacuumed packed foods (includes methods of processing, preserving and storing) • GMO food labeling and consumer concerns • Common food borne illnesses Sample Questions: Why are imported fruits and vegetables often subjected to radiation when they enter the United States? Which food preservation technique removes moisture by using heat?	Lesson 9.1 Food Production Systems p438 Lesson 9.2 Maintaining a Safe Food Supply p460
	Additional Features in the Textbook	

	Applications	Summaries, Vocabulary Review, Review Questions, Critical Thinking, and Analyze and Apply activities are found at the end of each lesson, as well as a list of SAE ideas for students. Each chapter ends with STEM and Academic Activities, Communicating about Agriculture, and Extending Your Knowledge questions and Activities.
	Careers	Each chapter opens with an interview with a student who has a successful SAE or a professional working in the agriculture industry. Over 45 Career Connection features introduce students to careers in varied sectors of the agriculture industry.
	AG ED, SAE, and FFA Connections	Found throughout the book, these features introduce the exciting world of leadership and personal development opportunities, including career development events in a variety of areas.
	Safety	Three lessons on safety and Safety First notes throughout the text that indicate potentially dangerous materials and practices and promote safe practices.
	Hands-On Agriculture	Features are highlighted throughout the textbook to provide clear instructions for hands-on service activities.
	STEM Connections	Located throughout the textbook, these features integrate all four components of STEM education, as well the social sciences and language arts.