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Goodheart-Willcox Correlation of *Principles of Agriculture, Food, and Natural Resources* ©2017 to Oklahoma Academic Standards for Agricultural Education Course: Introduction to Agriscience – Grades 9-12

Standard	Correlating Textbook Pages
The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	
(A) identify career development, education, and entrepreneurship opportunities in the field of agriculture, food, and natural resources	100, 103, 112, 117, 125
(B) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in agriculture, food, and natural resources	106–107, 129–130
(C) demonstrate knowledge of personal and occupational safety, health, environmental regulations, and first-aid policy in the workplace	144–207, 470–472
(D) analyze employers' expectations, such as appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	129–130
(E) Identify careers in agriculture, food, and natural resources with required aptitudes in science, technology, engineering, mathematics, language arts, and social studies	119–123
The student develops an improved supervised agriculture experience program as it relates to agriculture, food, and natural resources. The student is expected to:	
(A) plan, propose, conduct, document, and evaluate a supervised agriculture experience program as an experiential learning activity	103, 108–111, 113
(B) apply proper record-keeping skills as they relate to the supervised agriculture experience	110–113
(C) participate in youth leadership opportunities to create a well-rounded experience program	60–61
(D) produce and participate in a local program of activities using a strategic planning process	60–61, 100, 103–110

The student analyzes concepts related to global diversity. The student is expected to:	
(A) compare and contrast global agricultural markets, currency, and trends	8, 33, 408–415, 454–469
(B) evaluate marketing factors and practices that impact the global markets	10, 461–467
The student explains the historical, current, and future significance of the agricultural, food, and natural resources industry. The student is expected to:	
(A) define the scope of agriculture	5
(B) analyze the scope of agriculture, food, and natural resources and its effect upon society	5, 12
(C) evaluate significant historical and current agriculture, food, and natural resource developments	17–18, 26, 35–37
(D) identify potential future scenarios for agriculture, food, and natural resources systems, including global impacts	37–39
(E) describe how emerging technologies and globalization impacts agriculture, food, and natural resources	228–229, 278–289
(F) compare and contrast issues impacting agriculture, food, and natural resources such as biotechnology, employment, safety, environment, and animal welfare issues	4–15
The student analyzes the structure of agricultural, food, and natural resources leadership in organizations. The student is expected to:	
(A) develop and demonstrate leadership skills and collaborate with others to accomplish organizational goals and objectives	52–57, 59–61
(B) develop and demonstrate personal growth skills and collaborate with others to accomplish organizational goals and objectives	52–61
The student demonstrates appropriate personal and communication skills. The student is expected to:	
((A) demonstrate written and oral communication skills appropriate for formal and informal situations such as prepared and extemporaneous presentations	65–71
((B) demonstrate effective listening skills appropriate for formal and informal situations	69

The student applies appropriate research methods to agriculture, food, and natural resources topics. The student is expected to:	
(A) discuss major research and developments in the fields of agriculture, food, and natural resources	26–29, 232–247
(B) use a variety of resources for research and development	102, 106–108, 213
(C) describe scientific methods of research	211–217
The student applies problem-solving, mathematical, and organizational skills in order to maintain financial and logistical records. The student is expected to:	
(A) develop a formal business plan	403–408
(B) develop, maintain, and analyze records	408–415
The student uses information technology tools to access, manage, integrate, and create information related to agriculture, food, and natural resources. The student is expected to:	
(A) apply technology applications such as industry- relevant software and Internet applications	256–295
(B) utilize collaborative, groupware, and virtual meeting software	37, 73, 78–87, 129, 438
(C) analyze the benefits and limitations of emerging technology such as online mapping systems, drones, and robotics	285–286
(D) explain the benefits of computer based and mobile application equipment in agriculture, food, and natural resources	280–284
The student develops technical knowledge and skills related to soil systems. The student is expected to:	
(A) identify the components and properties of soils	929–932, 936–940
(B) identify and describe the process of soil formation	932–936
(C) conduct experiments related to soil chemistry	941, 947
The student develops technical knowledge and skills related to plant systems. The student is expected to:	
(A) describe the structure and functions of plant parts	738–745, 748–752
(B) discuss and apply plant germination, growth, and development	745–747

(C) describe plant reproduction, genetics, and breeding	750–753
(D) identify plants of importance to agriculture, food, and natural resources	757–763, 773–776, 786
(E) use tools, equipment, and personal protective equipment common to plant systems	159–163, 177–178, 763–766, 776, 780–782
The student develops technical knowledge and skills related to animal systems. The student is expected to:	
(A) describe animal growth and development	509–510, 529–531, 539–540, 574–578, 618–619, 629
(B) identify animal anatomy and physiology	532–533, 548–549, 581–582, 608–610, 612–613, 629–632
(C) identify and evaluate breeds and classes of livestock	508, 516–522, 526, 533–535, 541–548, 555–562, 574–575
(D) explain animal selection, reproduction, breeding, and genetics	233–235, 510–511, 650–680
The student describes the principles of food products and processing systems. The student is expected to:	
(A) evaluate food products and processing systems	443–444, 449–451, 458
(B) determine trends in world food production	454–458
(C) discuss current issues in food production	454–458
(D) use tools, equipment, and personal protective equipment common to food products and processing systems	159–163, 379–391
The student safely performs basic power, structural, and technical system skills in agricultural applications. The student is expected to:	
(A) identify major areas of power, structural, and technical systems	380–384
(B) use safe and appropriate laboratory procedures and policies	158–159
(C) create proposals that include bill of materials, budget, schedule, drawings, and technical skills developed for basic power, structural, and technical system projects or structures	374–375, 407
(D) identify building materials and fasteners	333, 337–339, 340–344, 376, 1057–1058

(E) use tools, equipment, and personal protective equipment common to power, structural, and technical systems	177–178, 331–363
The student explains the relationship between agriculture, food, and natural resources and the environment. The student is expected to:	
(A) determine the effects of agriculture, food, and natural resources upon safety, health, and the environment	144–207, 852
(B) identify regulations relating to safety, health, and environmental systems in agriculture, food, and natural resources	146–157, 470–472
(C) identify and design methods to maintain and improve safety, health, and environmental systems in agriculture, food, and natural resources	159, 167, 852, 862, 922–923, 968, 983–984
(D) research and analyze alternative energy sources that stem from or impact agriculture, food, and natural resources	32–39, 298–317, 320–328
(E) evaluate energy and water conservation methods	35, 298–319, 964–974, 977–988
Communicate effectively through writing, speaking, listening, reading, and interpersonal abilities.	33
Demonstrate creativity by asking challenging questions and applying innovative procedures and methods.	32-33
Exhibit critical thinking and problem solving skills to locate, analyze and apply information in career planning and employment situations.	33
Model work readiness traits required for success in the workplace including integrity, honesty, accountability, punctuality, time management, and respect for diversity.	33
Apply the appropriate skill sets to be productive in a changing, technological, diverse workplace to be able to work independently and apply team work skills.	33
Present a professional image through appearance, behavior and language.	33

Classify the basic structural and functional organization of the human body and identify body planes, cavities, regions, directional terms, tissues, organs and parts of the cell.	--
Define anatomy, physiology, homeostasis, metabolism and cellular respiration.	52, 646, 653, 639, 659
Identify body planes, cavities, abdominal regions and directional terms. (These will be utilized later in the various anatomy systems).	5-9
Describe and demonstrate anatomical position utilizing directional terms.	
Classify the basic structural and functional organization of the human body beginning at the cellular level to also include tissues, organs and systems.	12
Identify the structural components of a cell, and describe the function and relationship of each component.	55-68
Explain the process of mitosis and meiosis.	65, 591-593, 612
Identify the major types of tissue, and provide examples of each type.	69-79
Demonstrate recognition of subjective and objective observations. Document signs and symptoms in the simulated electronic medical record.	24-26
Analyze the anatomy, physiology and basic pathophysiology of the integumentary system, and evaluate and monitor body temperature.	--
Analyze the basic structures and functions of the integumentary system	93-100
Identify and explain medical terms related to the integumentary system, and utilize appropriately when documenting in a simulated electronic medical record.	100
Research common diseases, disorders and emerging diseases of the integumentary system including the pathophysiology, prevention, diagnosis and treatment that might be utilized in each.	101-113
Make observations of the skin to include: color, temperature to touch, scarring, bruising, abrasions, lacerations, or other abnormalities.	101-113

Discuss the role of the integumentary system in homeostasis regarding body temperature.	
Demonstrate measuring and recording of temperature, and identify abnormal results.	93-94
Investigate the anatomy, physiology, and basic pathophysiology of the cardiovascular system, and evaluate and monitor blood pressure and pulse.	--
Analyze the basic structures and functions of the cardiovascular system.	414 - 453
Identify and explain medical terms related to the cardiovascular system, and utilize when documenting in electronic medical record.	421-422, 426, 440-441, 452-453
Research common diseases, disorders, and emerging diseases of the cardiovascular system including the pathophysiology, prevention, diagnosis and treatment (including biomedical therapies) that might be utilized in each.	442-452
Describe the components of blood, and the functions of each. Research when blood components are prescribed for a patient and why.	
Identify and describe the functions of the chambers, valves and associated vessels of the heart.	414-418
Distinguish differences in anatomy and pathology of blood vessels to include arteries, arterioles, capillaries, venules, and veins.	427-430
Identify and trace the flow of blood through the heart, and provide distinction between the pulmonary and systemic circulation.	430-436
Name the parts of the conduction system of the heart, and trace the impulses during initiation and conduction.	425
Demonstrate measuring and recording blood pressure and pulse, and identify abnormal results.	
Examine the anatomy, physiology and basic pathophysiology of the respiratory system, and evaluate and monitor respirations.	--
Analyze the basic structures and functions of the respiratory system.	340-367
Identify and explain medical terms related to the respiratory system, and utilize when documenting in electronic medical record.	347, 355-356, 367

Research common diseases, disorders, and emerging diseases of the respiratory system including the pathophysiology, prevention, diagnosis and treatment (including biomedical therapies) that might be utilized in each.	357-367
Differentiate between the upper and lower respiratory tract while tracing the pathway of air into and out of the respiratory system.	340-346
Explain the physiology of breathing, to include the process of gas exchange.	350-352
Analyze the interdependence of the cardiovascular and respiratory systems as they relate to gas exchange, circulation, and the support of vital organs of the human body.	417-418
Demonstrate measuring and recording respirations, and identify abnormal results.	
Evaluate the anatomy, physiology, and basic pathophysiology of the muscular and skeletal systems, and perform technical skills related to the systems.	--
Analyze the basic structures and functions of the muscular system.	174-270
Analyze the basic structures and functions of the skeletal system, including locating and identifying the bones of the skeletal system and hemopoiesis.	120-163
Explain the relationship between the muscular and skeletal systems, and identify their interdependence as they relate to body structure, movement and posture.	122-123
Identify and explain medical terms related to the muscular and skeletal systems, and utilize when documenting in the electronic medical record.	
Research common diseases, disorders, and emerging disorders of the muscular and skeletal systems including pathophysiology, prevention, diagnosis and treatment that might be utilized.	155-162, 200-206
Differentiate between the axial and appendicular skeletons.	132, 142
Describe the development of the skeletal system.	122-130
Locate and identify the types of joints in the skeletal system.	
Locate and identify the types of muscles in the muscular system.	174-176

Perform range of motion (ROM) for joints such as the shoulder, wrist and ankle.	152-153
Differentiate between active and passive range of motion.	151-154