

# Competencies for Secondary Teachers: Agriculture, Grades 7-12

**2014**

In addition to the Arkansas Teaching Standards, the teacher of Agriculture, grades 7-12, shall demonstrate knowledge and competencies in the following areas:

<p><b>1. Plant and Soil Science</b></p> <p>CCTC: AG-PL 1-4</p>	<ul style="list-style-type: none"> <li>1.1 Ability to analyze historic and current trends impacting the plant science industry</li> <li>1.2 Ability to develop and implement a crop management plan for a given production goal that accounts for environmental factors</li> <li>1.3 Ability to apply the principles of classification, plant anatomy and plant physiology to plant production and management</li> <li>1.4 Ability to propagate, culture, and harvest plants and plant products based on current industry standards</li> <li>1.5 Ability to apply principles of design in plant systems to enhance an environment (e.g., floral, forest, landscape, and farm)</li> <li>1.6 Ability to demonstrate knowledge and usage of soil types and growing media</li> </ul>
<p><b>2. Animal Science</b></p> <p>CCTC AG-ANI 1-7</p>	<ul style="list-style-type: none"> <li>2.1 Ability to analyze historic and current trends impacting the plant science industry</li> <li>2.2 Ability to utilize best-practice protocols based upon animal behaviors for animal husbandry and welfare</li> <li>2.3 Ability to design and provide proper animal nutrition to achieve desired outcomes for performance, development, reproduction, and/or economic production</li> <li>2.4 Ability to apply principles of animal reproduction to achieve desired outcomes for performance, development, and/or economic production</li> <li>2.5 Ability to evaluate environmental factors affecting animal performance and implement procedures for enhancing performance and animal health</li> <li>2.6 Ability to classify, evaluate, and select animals based on anatomical and physiological characteristics</li> <li>2.7 Ability to apply principles of effective animal health care</li> </ul>
<p><b>3. Food Science and Biotechnology</b></p> <p>CCTC AG-FD 1-4</p>	<ul style="list-style-type: none"> <li>3.1 Ability to develop and implement procedures to ensure safety, sanitation, and quality in food product and processing facilities</li> <li>3.2 Ability to apply principles of nutrition, biology, microbiology, biotechnology, chemistry, and human behavior to the development of food products</li> <li>3.3 Ability to select and process food products for storage, distribution, and consumption</li> <li>3.4 Ability to explain the scope of the food industry and the historical and current developments of food products and processing</li> <li>3.5 Ability to explain industry organizations, groups, and regulatory agencies affect on food products and processing industry</li> <li>3.6 Ability to demonstrate knowledge of the major innovations, historical developments, and applications of biotechnology in agriculture</li> </ul>

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Praxis II (5701) = Praxis II: Agriculture

Revised 8/7/2014

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	3.7 Ability to demonstrate knowledge of the ethical, legal, social, cultural, safety, and environmental issues related to biotechnology
<b>4. Agricultural Mechanization and Technology</b>  CCTC AG-PST 1-5	4.1 Ability to apply physical science principles and engineering applications to solve problems and improve performance in AFNR power, structural, and technical systems 4.2 Ability to operate and maintain AFNR mechanical equipment and power systems 4.3 Ability to service and repair AFNR mechanical equipment and power systems 4.4 Ability to plan, build, and maintain AFNR structures 4.5 Ability to use control, monitoring, geospatial and other technologies in AFNR power, structural, and technical systems
<b>5. Agricultural Business and Economics</b>  CCTC AG-BIZ 1-6	5.1 Ability to examine and summarize the importance of health, safety, and environmental management systems in AFNR businesses 5.2 Ability to apply management planning principles in AFNR businesses 5.3 Ability to use record keeping to accomplish AFNR business objectives, manage budgets, and comply with laws and regulations 5.4 Ability to manage cash budgets, credit budgets, and credit for an AFNR business using generally accepted accounting principles 5.5 Ability to develop a business plan for an AFNR business 5.6 Ability to use sales and marketing principles to accomplish AFNR business objectives
<b>6. Natural Resources and Environment</b>  CCTC AG-NR 2-4 CCTC AG-ENV 1-5	6.1 Ability to evaluate the nature and scope of the Agriculture, Food & Natural Resources Career Cluster™ and the role of agriculture, food, and natural resources (AFNR) in society and the economy 6.2 Ability to demonstrate stewardship of natural resources in AFNR activities 6.3 Ability to analyze the interaction among AFNR systems in the production, processing and management of food, fiber, and fuel and the sustainable use of natural resources 6.4 Ability to use analytical procedures and instruments to manage environmental service systems 6.5 Ability to evaluate the impact of public policies and regulations on environmental service system operations 6.6 Ability to develop proposed solutions to environmental issues, problems, and applications using scientific principles of meteorology, soil science, hydrology, microbiology, chemistry, and ecology 6.7 Ability to demonstrate the operation of environmental service systems (e.g., pollution control, water treatment, wastewater treatment, solid waste management and energy conservation)

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	<p>6.8 Ability to use tools, equipment, machinery, and technology common to tasks in environmental service systems</p> <p>6.9 Knowledge of the current issues and regulations in environmental and natural resource management</p>
<p><b>7. Leadership and Career Development</b></p>	<p>7.1 Ability to understand career development events and student organizations (including Future Farmers of America ( FFA))</p> <p>7.2 Ability to understand experiential learning processes and planning</p> <p>7.3 Ability to evaluate program attributes and needs assessment</p> <p>7.4 Ability to analyze historic and current trends of agricultural education</p> <p>7.5 Ability to demonstrate knowledge of individual and team leadership skills by</p> <ul style="list-style-type: none"> <li>• Describing effective communication skills including written, verbal, and nonverbal</li> <li>• Identifying techniques to improve listening, reading, writing, speaking, and nonverbal communication skills</li> </ul> <p>7.6 Ability to demonstrate knowledge of research skills to make informed decisions by</p> <ul style="list-style-type: none"> <li>• Describing how to determine validity and reliability of a source (e.g., author, date, bibliography, type of source)</li> <li>• Demonstrating an understanding of the scientific method</li> </ul> <p>7.7 Ability to describe the career opportunities and means to achieve those opportunities across the various pathways of agriculture</p>
<p><b>8. Disciplinary Literacy</b></p> <p>CCSS - English/Language Arts: English Language Arts &amp; Literacy in Science, and Technical Subjects, grades 7-12</p>	<p><u>Reading in Science and Technical Subjects, Grades 7-12</u></p> <p>Reading competencies for literacy in science and technical subjects for grades 7-12 include the ability to read informational texts in science and technical subjects closely and critically to analyze the key ideas and details as well as craft and structure with the purpose of integrating knowledge and ideas both within and across texts by</p> <p>8.1 Citing specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account</p> <p>8.2 Determining the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms</p> <p>8.3 Following precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyzing the specific results based on explanations in the text</p> <p>8.4 Determining the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 7-12 texts and topics Analyzing how the text structures information or ideas are organized into categories or hierarchies,</p>

	<p>demonstrating understanding of the information or ideas</p> <p>8.5 Analyzing the author’s purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved</p> <p>8.6 Integrating and evaluating multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem</p> <p>8.7 Evaluating the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information</p> <p>8.8 Synthesizing information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible</p> <p>8.9 Reading and comprehending a variety of scientific and technical documents appropriate for instruction within the 7-12 text complexity band</p> <p><u>Writing in History/Social Studies, Science, and Technical Subjects, Grades 7-12</u></p> <p>Writing competencies for literacy in history/social studies, science, and technical subjects for grades 7-12 will be demonstrated by</p> <p>8.10 Writing arguments focused on discipline-specific content by</p> <ol style="list-style-type: none"> <li>Introducing precise, knowledgeable claim(s), establishing the significance of the claim(s), distinguishing the claim(s) from alternate or opposing claims, and creating an organization that logically sequences the claim(s), counterclaims, reasons, and evidence</li> <li>Developing claim(s) and counterclaims fairly and thoroughly, supplying the most relevant data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form that anticipates the audience’s knowledge level, concerns, values, and possible biases.</li> <li>Using words, phrases, and clauses as well as varied syntax to link the major sections of the text, creating cohesion, and clarification of the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.</li> <li>Establishing and maintaining a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.</li> <li>Providing a concluding statement or section that follows from or supports the argument presented</li> </ol> <p>8.11 Writing informative/explanatory texts, including the narration of historical events, scientific procedures / experiments, or technical processes by</p>
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	<ul style="list-style-type: none"> <li>a. Introducing a topic and organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension</li> <li>b. Developing the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information, and examples appropriate to the audience’s knowledge of the topic</li> <li>c. Using varied transitions and sentence structures to link the major sections of the text, creating cohesion, and clarifying the relationships among complex ideas and concepts</li> <li>d. Using precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; conveying a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers</li> <li>e. Providing a concluding statement or section that follows from and supports the information or explanation provided (e.g., articulating implications or the significance of the topic)</li> </ul> <p>8.12 Producing clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience</p> <p>8.13 Developing and strengthening writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience</p> <p>8.14 Using technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information</p> <p>8.15 Conducting short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation</p> <p>8.16 Gathering relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrating information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source, and following a standard format for citation</p> <p>8.17 Drawing evidence from informational texts to support analysis, reflection, and research</p> <p>8.18 Writing routinely over extended time frames (time for reflection and revision) and shorter time frames (a single</p>
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