



1. COURSE TITLE – CAREER TECHNICAL EDUCATION PATHWAY/SECTOR

AG Sales and Services – Agricultural Business / Agriculture and Natural Resources

2. CBEDS TITLE

Agriculture: Business Management and Marketing

3. CBEDS NUMBER

4040

4. JOB TITLES

O*NET	TITLE
22308	Landscape
49008	Food Product Sales
49011	Ag Sales, Salesperson/Flowers, Horticultural Salesperson and Nursery Products
49023A	Cashier (Auction Clerk)
49032A	Demonstrators and Promoters
55347	General Office Clerk (Auction Assistant)
79002A	Forest and conservation Workers
79041	Gardeners and Groundskeepers
79999B	Irrigation Workers
79999D	Farmer
79999K	Agricultural Crop Farm Managers

5. COURSE DESCRIPTION

The Agriculture Sales and Services course is designed to give students highly individualized instruction in various areas of the agriculture industry relevant to sales, services and production. Classroom instruction will enable students to: (1) become knowledgeable of the many career opportunities available in agriculture; (2) become proficient in employability skills; (3) understand the agriculture business, marketing functions and government regulations offering agriculture business management; (4) become knowledgeable of the variety of records necessary in operating an agriculture business and (5) develop leadership skills through participation in the FFA. A supervised occupational experience program is required; and (6) work experience (community classroom) is available for students who qualify.

6. HOURS

Classroom Theory/Applied	180
Community Classroom/Coop Voc Ed	120
Future Farmers of America - FFA	100
TOTAL HOURS	400

7. RECOMMENDED PREREQUISITE

Required Must be 16 years of age or older, a junior or senior in high school, an out-of-school youth, or an adult.

Recommended One year of agriculture required or approval from teacher
None

8. DATE WRITTEN	August 20, 2004
UPDATED	October 2009

B. Career Technical Skills							
Class Hours	CVE Hours	FFA	CONTENT AREA SKILLS	Foundation Standards	Mention - M Reinforced - R Taught - T	CTE Pathway Standards	Mention - M Reinforced - R Taught - T
30	10	10	I. Technology Skills	* See attached pages that follow			
			A. Student will demonstrate entering data in an appropriate format utilizing: 1. Keyboarding skills 2. The Internet 3. Word processing software 4. Data Base software 5. A computerized accounting system (FFA)	4.1 4.2 4.3 4.5 4.6 5.1 11.0	T		
25	10	10	II. Agriculture Marketing				
			A. Student will demonstrate an understanding of the functions of purchasing and marketing in agriculture business including: 1. Basic principles of marketing 2. Advertising 3. Promotion 4. Public Relations 5. Marketing agriculture products	R(2.3) 8.3 A1(10.0) A1(12.0) A1(13.0) A1(15.0) 11.0	M T M T	A1.6 A7.1 A7.2 A7.3 A7.4 A7.5 A7.6	T
20	5	10	III. California and Global Agriculture				
			A. Student will develop an awareness of the interrelationship of California agriculture and society on the local, state, national, and international levels including: 1. Economy of California agriculture 2. Agriculture and society 3. Agriculture and California resources 4. California and local production 5. California and national agriculture economy 6. California agriculture and the global economy 7. Agriculture trends 8. Agencies for agriculture 9. Agricultural resources 10. Agricultural and the environment 11. Energy and agriculture	3.4 7.1 7.4 8.1 8.2 8.3 11.0 HSS (12.2) (12.2.7) (12.4.3) R(2.1) R(2.2) R(2.3)	T R R R R R R	A9.1 A9.2 A9.3 A9.4 A9.5 A9.6 A9.7	T

Career Technical Skills							
Class Hours	CVE Hours	FFA	CONTENT AREA SKILLS	Foundation Standards	Mention - M Reinforced - R Taught - T	CTE Pathway Standards	Mention - M Reinforced - R Taught - T
15	15	10	IV. Cooperative Marketing				
			A. Student will demonstrate an insight into the importance of agriculture; show where new opportunities for employment and careers exist, and demonstrate an understanding of business structures and management techniques within cooperatives including: 1. The American private enterprise system 2. Agriculture cooperatives in America 3. Operating an agriculture cooperative 4. Cooperative principles 5. Decision-makers in a cooperative 6. Laws affecting agriculture cooperatives 7. Cooperatives and taxes 8. Agencies that serve agriculture cooperatives	R(2.3) W(2.6) 3.2 3.6 8.3 HSS (12.2) (12.2.2) (12.2.3) (12.2.6) (12.2.10)	M R T R	A1.1-6 A2.1-6 A6.1-3 A9.1-3	T
10	10	10	V. Safety				
			A. Student will use equipment properly for maximum performance and safety 1. Farm safety/regulations 2. Animal safety/handling 3. Farm maintenance	R(2.3) 6.1 6.2 6.3 6.4 6.5 6.6	M T		

Career Technical Skills							
Class Hours	CVE Hours	FFA	CONTENT AREA SKILLS	Foundation Standards	Mention - M Reinforced - R Taught - T	CTE Pathway Standards	Mention - M Reinforced - R Taught - T
10	10	10	VI. Basic Agriculture Mechanism				
			A. Student will determine how mechanical skills, concepts, and principles that are used in agriculture, related occupations and as they relate to Agriculture Sales and Services including: 1.Hand tools, fasteners, and hardware 2.Shop orientation/procedures 3.Rope work 4.Sketching and drawing projects 5.Figuring a bill of materials 6.Electricity 7.Wood projects 8.Hammers and nails 9.Personal safety in agriculture mechanics 10. Mechanics in the world of agriculture 11. Shop organization 12. Layout tool/procedures	R(2.3) 3.2 5.1 5.3 10.4 11.0	R T	B1.1 B1.2 B1.3 B2.1-4 B3.1-5	T
20	20	10	VII. Record Keeping of Student Projects (each student will have a project record book)				
			A. Students will maintain financial records including: 1. Introduction/SOEP 2. Calendars 3. Business agreements 4. Budgets 5. Journals 6. Loan payments 7. Property inventory 8. Financial statements 9. Income summaries 10. Accounts Receivable/Payable	R(2.3) 5.1 5.2 5.3 A1(10.0)	M T M	A4.1 A4.2 A4.3 A4.4 A4.5 A4.6	T

Career Technical Skills							
Class Hours	CVE Hours	FFA	CONTENT AREA SKILLS	Foundation Standards	Mention - M Reinforced - R Taught - T	CTE Pathway Standards	Mention - M Reinforced - R Taught - T
10	0	10	VIII. Parliamentary Procedure				
			A. Student will research and debate current agriculture industry and FFA topics, use parliamentary procedure, and debate in a logical and informed manner including: 1. Origins 2. Handling of motions 3. Subsidiary motions I 4. Subsidiary motions II 5. Incidental motions 6. Unclassified motions 7. Application of parliamentary procedure	5.1 5.3 8.3 9.1-9.6 11.0	T		
20	20	10	IX. Animal Science				
			A. Student will demonstrate knowledge of species of animals and more specific areas of animal production including: 1. Domestic animals 2. Animal behavior and biology 3. Major mammal body systems 4. Genetics and breeding 5. Nutrition and feeds 6. Animal health 7. Livestock evaluation and selection 8. Meat grading 9. Sales and services	11.0		D2.1-4 D4.1-5 D5.1-5 D12.2 D12.5	T
20	20	10	X. Plant Science				
			A. Student will define the basic parts of a plant and more specific areas of plant production including: 1. Basic botany 2. Soils 3. Plant nutrition 4. Irrigation 5. Pest management 6. Measurement in plant science 7. Hydroponics 8. Sales and services	11.0	T	G1.1-6 G5.1-5 G6.1-4	T
180	115	100	Total Hours				

C. Expected Student Proficiencies	
<p>CURRENT TECHNOLOGY SKILLS</p> <ul style="list-style-type: none"> Word Processing Database PowerPoint Utilize Internet Computerized accounting system Time management <p>DEVELOP, PROMOTE, AND ADVERTISE AGRICULTURE PRODUCTS</p> <p>INTERRELATIONSHIPS OF CALIFORNIA AGRICULTURE</p> <ul style="list-style-type: none"> Economy of CA Agriculture Agriculture trends Agencies for agriculture Resources <p>COOPERATIVE MARKETING</p> <ul style="list-style-type: none"> Classes Organization Operations Laws 	<p>AGRICULTURAL MECHANICS</p> <ul style="list-style-type: none"> Hand tools, fasteners and hardware Shop orientation and organization Sketching and drawing projects Bill of Materials Layout tools/procedures California Agricultural Record Book Parliamentary Procedure <p>ANIMAL SCIENCE/ANIMAL PRODUCTION</p> <ul style="list-style-type: none"> Animal Species Genetics and breeding Nutrition and feeds Animal Health Evaluation and selection <p>PLANT SCIENCE/PLANT PRODUCTION</p> <ul style="list-style-type: none"> Plant nutrition Irrigation Pest management

10. ADDITIONAL RECOMMENDED/OPTIONAL ITEMS

A. **Academic credit:** One year or 10 units

B. **Other – n/a**

ARTICULATION None

UC APPROVAL None

INDUSTRY CERTIFICATION

C. **Instructional Strategies:**

- Lecture
- Demonstration
- Design problems and vocabulary
- Critical comparison
- Readings
- Project-based learning
- Work-based learning
- Guest presentations
- Group projects
- Computer programs
- Field trips
- Videos
- Internet research
- Peer learning
- FFA

D. **Instructional Materials:**

- Lecture notes, handouts, videos and field trips
- Publications:
 1. AgriScience - Cooper, Elmer; Delmar Publishers; 1990
 2. Agricultural Mechanics; Cooper; Elmer; Delmar Publishers, 1987
 3. Leadership; Ricketts; Cliff; Delmar Publishers; 1997
 4. Landscaping; Ingels; Jack; Delmar Publishers; 1987
 5. Western Garden Book; Sunset; Sunset Publishing; 1992
 6. Floral Design; Hunter; Norah; Delmar Publishers; 1994
 7. Stockman=s Handbook; Ensminger, M.E.; the Interstate Publishers; 1980
 8. Official FFA Manual; National FFA Organization; 1996
 9. Exploring Farmer Cooperative; AG Council of CA; 1996

11. FOUNDATION STANDARDS ALIGNED

1.0 Academics

Students understand the academic content required for entry into postsecondary education and employment in the Engineering and Design sector. *(The standards listed below retain in parentheses the numbering as specified in the mathematics, science, history–social science, and visual and performing arts content standards adopted by the State Board of Education.)*

Algebra I

Specific applications of Algebra I standards (grades eight through twelve):

- (10.0) Students add, subtract, multiply, and divide monomials and polynomials. Students solve multistep problems, including word problems, by using these techniques.
- (12.0) Students simplify fractions with polynomials in the numerator and denominator by factoring both and reducing them to the lowest terms.
- (13.0) Students add, subtract, multiply, and divide rational expressions and functions. Students solve both computationally and conceptually challenging problems by using these techniques.
- (15.0) Students apply algebraic techniques to solve rate problems, work problems, and percent mixture problems.

History/Social Science

Specific applications of Principles of Economics standards (grade twelve):

- (12.2) Students analyze the elements of America’s market economy in a global setting.
 - (12.2.2) Discuss the effects of changes in supply and/or demand on the relative scarcity, price, and quantity of particular products.
 - (12.2.3) Explain the roles of property rights, competition, and profit in a market economy.
 - (12.2.5) Understand the process by which competition among buyers and sellers determines a market price.
 - (12.2.6) Describe the effect of price controls on buyers and sellers.
 - (12.2.7) Analyze how domestic and international competition in a market economy affects goods and services produced and the quality, quantity, and price of those products.
 - (12.2.10) Discuss the economic principles that guide the location of agricultural production and industry and the spatial distribution of transportation and retail facilities.
- (12.4) Students analyze the elements of the U.S. labor market in a global setting.
 - (12.4.3) Discuss wage differences among jobs and professions, using the laws of demand and supply and the concept of productivity.

2.0 Communications

Students understand the principles of effective oral, written, and multimedia communication in a variety of formats and contexts. *(The standards listed below retain in parentheses the numbering as specified in the English–language arts content standards adopted by the State Board of Education.)*

Reading

Specific applications of Reading Comprehension standards (grades nine and ten):

- (2.1) Analyze the structure and format of functional workplace documents, including the graphics and headers, and explain how authors use the features to achieve their purposes.
- (2.2) Prepare a bibliography of reference materials for a report using a variety of consumer, workplace, and public documents.
- (2.3) Generate relevant questions about readings on issues that can be researched. of the text to defend and clarify interpretations.

Writing

Specific applications of Writing Strategies and Applications standards (grades nine and ten):

- (1.1) Establish a controlling impression or coherent thesis that conveys a clear and distinctive perspective on the subject and maintain a consistent tone and focus throughout the piece of writing.
- (1.2) Use precise language, action verbs, sensory details, appropriate modifiers, and the active rather than the passive voice.
- (2.5) Write business letters:
 - a. Provide clear and purposeful information and address the intended audience appropriately.

- b. Use appropriate vocabulary, tone, and style to take into account the nature of the relationship with, and the knowledge and interests of, the recipients.
- c. Highlight central ideas or images.
- d. Follow a conventional style with page formats, fonts, and spacing that contribute to the documents' readability and impact.

Specific applications of Writing Strategies and Applications standards (grades eleven and twelve):

(2.5) Write job applications and résumés:

- a. Provide clear and purposeful information and address the intended audience appropriately.
- b. Use varied levels, patterns, and types of language to achieve intended effects and aid comprehension.
- c. Modify the tone to fit the purpose and audience.
- d. Follow the conventional style for that type of document (e.g., résumé, memorandum) and use page formats, fonts, and spacing that contribute to the readability and impact of the document.

(2.6) Deliver multimedia presentations:

- a. Combine text, images, and sound and draw information from many sources (e.g., television broadcasts, videos, films, newspapers, magazines, CD-ROMs, the Internet, electronic media-generated images).
- b. Select an appropriate medium for each element of the presentation.
- c. Use the selected media skillfully, editing appropriately and monitoring for quality.
- d. Test the audience's response and revise the presentation accordingly.

Written & Oral English Language Conventions

Specific applications of English Language Conventions standards (grades eleven and twelve):

- (1.1) Demonstrate control of grammar, diction, and paragraph and sentence structure and an understanding of English usage.
- (1.2) Produce legible work that shows accurate spelling and correct punctuation and capitalization.

Listening & Speaking

Specific applications of Listening and Speaking Strategies and Applications standards (grades nine and ten):

- (1.1) Formulate judgments about the ideas under discussion and support those judgments with convincing evidence.
- (1.7) Use props, visual aids, graphs, and electronic media to enhance the appeal and accuracy of presentations.
- (2.2) Deliver expository presentations:
 - a. Marshal evidence in support of a thesis and related claims, including information on all relevant perspectives.
 - b. Convey information and ideas from primary and secondary sources accurately and coherently.
 - c. Make distinctions between the relative value and significance of specific data, facts, and ideas.
 - d. Include visual aids by employing appropriate technology to organize and display information on charts, maps, and graphs.
 - e. Anticipate and address the listener's potential misunderstandings, biases, and expectations.
 - f. Use technical terms and notations accurately.

(2.3) Apply appropriate interviewing techniques:

- a. Prepare and ask relevant questions.
- b. Make notes of responses.
- c. Use language that conveys maturity, sensitivity, and respect.
- d. Respond correctly and effectively to questions.
- e. Demonstrate knowledge of the subject or organization.
- f. Compile and report responses.
- g. Evaluate the effectiveness of the interview.

Specific applications of Listening and Speaking Strategies and Applications standards (grades eleven and twelve):

- (1.8) Use effective and interesting language, including:
 - a. Informal expressions for effect
 - b. Standard American English for clarity

c. Technical language for specificity

(1.14) Analyze the techniques used in media messages for a particular audience and evaluate their effectiveness (e.g., Orson Welles' radio broadcast "War of the Worlds").

(2.4) Deliver multimedia presentations:

a. Combine text, images, and sound by incorporating information from a wide range of media, including films, newspapers, magazines, CD-ROMs, online information, television, videos, and electronic media-generated images.

b. Select an appropriate medium for each element of the presentation.

c. Use the selected media skillfully, editing appropriately and monitoring for quality.

d. Test the audience's response and revise the presentation accordingly

3.0 CAREER PLANNING & MANAGEMENT

Students understand how to make effective decisions, use career information, and manage personal career plans:

3.1 Know the personal qualifications, interests, aptitudes, information, and skills necessary to succeed in careers.

3.2 Understand the scope of career opportunities and know the requirements for education, training, and licensure.

3.3 Develop a career plan that is designed to reflect career interests, pathways, and postsecondary options.

3.4 Understand the role and function of professional organizations, industry associations, and organized labor in a productive society.

3.5 Understand the past, present, and future trends that affect careers, such as technological developments and societal trends, and the resulting need for lifelong learning.

3.6 Know important strategies for self-promotion in the hiring process, such as job applications, résumé writing, interviewing skills, and preparation of a portfolio.

4.0 TECHNOLOGY

Students know how to use contemporary and emerging technological resources in diverse and changing personal, community, and workplace environments:

4.1 Understand past, present, and future technological advances as they relate to a chosen pathway.

4.2 Understand the use of technological resources to gain access to, manipulate, and produce information, products, and services.

4.3 Understand the influence of current and emerging technology on selected segments of the economy.

4.4 Understand geographic information systems (G.I.S.).

4.5 Determine the validity of the content and evaluate the authenticity, reliability, and bias of electronic and other resources.

4.6 Differentiate among, select, and apply appropriate tools and technology.

5.0 PROBLEM SOLVING & CRITICAL THINKING

Students understand how to create alternative solutions by using critical and creative thinking skills, such as logical reasoning, analytical thinking, and problem-solving techniques:

5.1 Apply appropriate problem-solving strategies and critical thinking skills to work-related issues and tasks.

5.2 Understand the systematic problem-solving models that incorporate input, process, outcome, and feedback components.

5.3 Use critical thinking skills to make informed decisions and solve problems.

6.0 HEALTH & SAFETY

Students understand health and safety policies, procedures, regulations, and practices, including the use of equipment and handling of hazardous materials:

6.1 Know policies, procedures, and regulations regarding health and safety in the workplace, including employers' and employees' responsibilities.

6.2 Understand critical elements of health and safety practices related to storing, cleaning, and maintaining tools, equipment, and supplies.

6.3 Understand how to locate important information on a material safety data sheet.

6.4 Maintain safe and healthful working conditions.

6.5 Use tools and machines safely and appropriately.

6.6 Know how to both prevent and respond to accidents in the agricultural industry.

7.0 RESPONSIBILITY & FLEXIBILITY

Students know the behaviors associated with the demonstration of responsibility and flexibility in personal, workplace, and community settings:

7.1 Understand the qualities and behaviors that constitute a positive and professional work demeanor.

7.2 Understand the importance of accountability and responsibility in fulfilling personal,

community, and workplace roles.

7.3 Understand the need to adapt to varied roles and responsibilities.

7.4 Understand that individual actions can affect the larger community.

7.5 Understand the importance of time management to fulfill responsibilities.

7.6 Know how to apply high-quality craftsmanship to a product or presentation and continually refine and perfect it.

8.0 ETHICS & LEGAL RESPONSIBILITY

Students understand professional, ethical, and legal behavior consistent with applicable laws, regulations, and organizational norms:

8.1 Know the major local, district, state, and federal regulatory agencies and entities that affect the industry and how they enforce laws and regulations.

8.2 Understand the concept and application of ethical and legal behavior consistent with workplace standards.

8.3 Understand the role of personal integrity and ethical behavior in the workplace.

8.4 Understand how to access, analyze, and implement quality assurance information.

9.0 LEADERSHIP & TEAMWORK

Students understand effective leadership styles, key concepts of group dynamics, team and individual decision making, the benefits of workforce diversity, and conflict resolution:

9.1 Understand the characteristics and benefits of teamwork, leadership, and citizenship in the school, community, and workplace settings.

9.2 Understand the ways in which preprofessional associations, such as the Future Farmers of America (FFA), and competitive career development activities enhance academic skills, promote career choices, and contribute to employability.

9.3 Understand how to organize and structure work individually and in teams for effective performance and the attainment of goals.

9.4 Know multiple approaches to conflict resolution and their appropriateness for a variety of situations in the workplace.

9.5 Understand how to interact with others in ways that demonstrate respect for individual and cultural differences and for the attitudes and feelings of others.

9.6 Understand leadership, cooperation, collaboration, and effective decision-making skills applied in group or team activities, including the student organization.

10.0 TECHNICAL KNOWLEDGE & SKILLS

10.1 Understand the aims, purposes, history, and structure of the FFA student organization, and know the opportunities it makes available.

10.2 Manage and actively engage in a career-related, supervised agricultural experience.

10.3 Understand the importance of maintaining and completing the California Agricultural Record Book.

10.4 Maintain and troubleshoot equipment used in the agricultural industry.

11.0 DEMONSTRATION & APPLICATION

Students demonstrate and apply the concepts contained in the foundation and pathway standards.

12. A. Agricultural Business Pathway

In the Agricultural Business Pathway, students learn about agricultural business operation and management. Topics include accounting, finance, economics, business organization, marketing, and sales.

A1.0 Students understand decision-making processes within the American free enterprise system:

A1.1 Differentiate among the components of the American free enterprise system and other forms of economic systems.

A1.2 Distinguish among the main characteristics of individual proprietorships, partnerships, corporations, and cooperatives.

A1.3 Understand the advantages and disadvantages of the four types of business ownership.

A1.4 Analyze appropriate decision-making tools and financial records to make key management decisions.

A1.5 Analyze physical production relationships to determine optimum use levels.

A1.6 Understand how to calculate the fixed and variable costs associated with the production of agricultural

products and determine the output level that will yield maximum profit.

A2.0 Students understand the fundamental economic principles of agribusiness and agricultural Production:

- A2.1 Understand how basic economic factors affect agricultural production and agribusiness management decisions.
- A2.2 Know basic agricultural economic terminology.
- A2.3 Understand the law of supply and demand as it effects price determination.
- A2.4 Analyze how agriculture uses scarce resources to meet the needs and demands of its consumers.
- A2.5 Differentiate between elastic and inelastic supply and demand.
- A2.6 Understand the law of diminishing returns and its impact on agricultural production.

A3.0 Students understand the role of credit in agribusiness and agricultural production:

- A3.1 Analyze the factors that determine the cost of credit in order to select optimum credit sources (e.g., the advantages and disadvantages of borrowing from the various types of credit providers and sources for short-, intermediate-, and longterm credit).
- A3.2 Know the criteria lenders use to evaluate repayment capacity.
- A3.3 Analyze balance sheets and cash-flow statements to determine the ability to repay loans.

A4.0 Students understand proper accounting principles and procedures used in business management and tax planning:

- A4.1 Understand the differences between cash and accrual accounting systems.
- A4.2 Understand the use and importance of budgets, income statements, balance sheets, and financial statements.
- A4.3 Understand the basis of taxation within the tax system and its impact on the economy, including the role of taxes in agribusiness.
- A4.4 Analyze the role of depreciation and purchasing in tax planning and liability.
- A4.5 Understand how to determine property values and how to complete a depreciation schedule.
- A4.6 Understand how to determine the tax obligations for an agribusiness.

A5.0 Students understand basic risk management principles and their impact on economic viability:

- A5.1 Understand environmental responsibility and its impact on agribusiness.
- A5.2 Understand the concept of liability and the economic impact of being held liable.
- A5.3 Understand the concept and process of risk management, including the use of risk management tools such as insurance.
- A5.4 Understand how recordkeeping, farm plans, and an analysis of best practices affect risk management decisions.
- A5.5 Understand the role of contingency plans in risk management.

A6.0 Students understand the role and value of agricultural organizations:

- A6.1 Understand the benefits of private, public, and governmental organizations, including the value and impact of cooperatives.
- A6.2 Understand how participation within organizations would be beneficial in supporting various agricultural operations.
- A6.3 Understand how to identify and electronically access public and private agricultural organizations.

A7.0 Students understand agricultural marketing systems:

- A7.1 Understand how marketing functions in a free market society.
- A7.2 Understand the advantages and disadvantages of the various marketing options for agricultural products and services.
- A7.3 Understand how the law of comparative advantage affects agricultural production.
- A7.4 Understand the impact of advertising and promotion on the marketing of agricultural products and services.
- A7.5 Understand how promotion trends for agricultural products influence individuals.

A7.6 Understand how to develop a marketing plan for an agricultural product or service.

A8.0 Students understand the sales of agricultural products and services:

A8.1 Determine the most effective methods for assessing customer needs and wants.

A8.2 Understand the stages in making a successful sale and the various techniques used to approach potential customers and overcome their objections.

A8.3 Examine the physiological and psychological factors that influence motivation to purchase, including the fundamental steps in making a purchase.

A9.0 Students understand local, national, and international agricultural markets and how trade affects the economy:

A9.1 Understand how the importance of agricultural imports and exports affects state and national economies.

A9.2 Know how governmental, economic, and cultural factors affect international trade.

A9.3 Compare and contrast United States trade policies with those of other important trading partners.

A9.4 Understand how biotechnology affects trade and global economies.

A9.5 Understand how different cultural values affect agricultural production and marketing.

A9.6 Understand how negotiations and bargaining agreements affect trade agreements.

A9.7 Analyze agricultural marketing strategies in other parts of the world.

B. Agricultural Mechanics Pathway

The Agricultural Mechanics Pathway prepares students for careers related to the construction, operation, and maintenance of equipment used by the agriculture industry. Basic agricultural mechanics skills and safety, standards B1.0 through B8.0, cover woodworking, electrical systems, plumbing, cold metal work, concrete, and welding technology. Advanced topics, standards B9.0 through B12.0, deal with metal fabrication, small engines, agriculture power and technology, and agriculture construction.

B1.0 Students understand personal and group safety:

B1.1 Practice the rules for personal and group safety while working in an agricultural mechanics environment.

B1.2 Know the relationship between accepted shop management procedures and a safe working environment.

B1.3 Know how to safely secure loads on a variety of vehicles.

B2.0 Students understand the principles of basic woodworking:

B2.1 Know how to identify common wood products, lumber types, and sizes.

B2.2 Know how to calculate board feet, lumber volume, and square feet.

B2.3 Know how to identify, select, and implement basic fastening systems.

B2.4 Complete a woodworking project, including interpreting a plan, developing a bill of materials and cutting list, selecting materials, shaping, joining, and finishing.

B3.0 Students understand the basic electricity principles and wiring practices commonly used in agriculture:

B3.1 Understand the relationship between voltage, amperage, resistance, and power in single-phase alternating current (AC) circuits.

B3.2 Know how to use proper electrical test equipment for AC and direct current (DC).

B3.3 Analyze and correct basic circuit problems (e.g., open circuits, short circuits, incorrect grounding).

B3.4 Understand proper basic electrical circuit and wiring techniques with nonmetallic cable and conduit as defined by the National Electric Code.

B3.5 Interpret basic agricultural electrical plans.

D. Animal Science Pathway

In the Animal Science Pathway, students study large, small, and specialty animals. Students explore the necessary elements—such as diet, genetics, habitat, and behavior—to create humane, ecologically and economically sustainable animal production systems. The pathway includes the study of animal anatomy and physiology, nutrition, reproduction, genetics, health and welfare, animal production, technology, and the management and processing of animal products and by-products.

D2.0 Students understand key principles of animal nutrition:

- D2.1 Understand the flow of nutrients from the soil, through the animal, and back to the soil.
- D2.2 Understand the principles for providing proper balanced rations for a variety of production stages in ruminants and monogastrics.
- D2.3 Understand the digestive processes of the ruminant, monogastric, avian, and equine digestive systems.
- D2.4 Understand how animal nutrition is affected by the digestive, endocrine, and circulatory systems.

D3.0 Students understand animal physiology:

- D3.1 Understand the major physiological systems and the function of the organs within each system.
- D3.2 Understand the animal management practices that are likely to improve the functioning of the various physiological systems.

D4.0 Students understand animal reproduction, including the function of reproductive organs:

- D4.1 Understand animal conception (including estrus cycles, ovulation, and insemination).
- D4.2 Understand the gestation process and basic fetal development.
- D4.3 Understand the parturition process, including the identification of potential problems and their solutions.
- D4.4 Understand the role of artificial insemination and embryo transfer in animal agriculture.
- D4.5 Understand commonly used animal production breeding systems (e.g., purebred compared with crossbred) and reasons for their use.

D5.0 Students understand animal inheritance and selection principles, including the structure and role of DNA:

- D5.1 Evaluate a group of animals for desired qualities and discern among them for breeding selection.
- D5.2 Understand how to use animal performance data in the selection and management of production animals.
- D5.3 Research and discuss current technology used to measure desirable traits.
- D5.4 Understand how to predict phenotypic and genotypic results of a dominant and recessive gene pair.
- D5.5 Understand the role of mutations (both naturally occurring and artificially induced) and hybrids in animal genetics.

D12.0 Students understand how animal products and by-products are processed and marketed:

- D12.1 Understand animal harvest, carcass inspection and grading, and meat processing safety regulations and practices and the removal and disposal of nonedible byproducts, such as those outlined in Hazard Analysis and Critical Control Point documents.
- D12.2 Understand the relative importance of the major meat classifications, including the per capita consumption and nutritive value of those classifications.
- D12.3 Understand how meat-based products and meals are made.
- D12.4 Understand how nonmeat products (such as eggs, wool, pelts, hides, and byproducts) are harvested and processed.
- D12.5 Understand how meat products and nonmeat products are marketed.
- D12.6 Understand the value of animal by-products to nonagricultural industries.

G. Plant and Soil Science Pathway

The Plant and Soil Science Pathway covers topics such as plant classification, physiology, reproduction, plant breeding, biotechnology, and pathology. In addition, students learn about soil management, water, pests, and equipment as well as cultural and harvest practices.

G1.0 Students understand plant classification principles:

- G1.1 Understand how to classify and identify plants by order, family, genus, and species.
- G1.2 Understand how to identify plants by using a dichotomous key.
- G1.3 Understand how common plant parts are used to classify the plants.
- G1.4 Understand the differences between and uses of native and nonnative plants.
- G1.5 Understand the differences between monocots and dicots.
- G1.6 Understand the differences between plants under production and weeds.

G5.0 Students understand pest problems and management:

- G5.1 Understand how to categorize insects as pests, beneficial, or neutral and their roles.
- G5.2 Understand the role of other pests, such as nematodes, molds, mildews, and weeds.
- G5.3 Know conventional, sustainable, and organic management methods to prevent or treat plant disease symptoms.
- G5.4 Understand integrated pest management to prevent, treat, and control plant disease symptoms (including conventional, sustainable, and organic management methods).
- G5.5 Understand how biotechnology can be used to manage pests.

G6.0 Students understand soils and plant production:

- G6.1 Understand soil types, soil texture, structure, and bulk density and explain the U.S. Department of Agriculture (USDA) soil-quality rating procedure.
- G6.2 Understand soil properties necessary for successful plant production, including pH, EC, and essential nutrients.
- G6.3 Understand soil biology and diagram the soil food chain.
- G6.4 Understand how soil biology affects the environment and natural resources.

LEGEND FOR REFERENCE OF ACADEMIC STANDARDS

Parenthetical notation preceding the content standard item refers to the grade level for the standard. i.e. (8) refers to grade 8, (9-10) refers to grades 9 & 10.

Example: (8) W2.1 refers to the Eighth Grade Writing Standard Item 2.1

English-Language Arts:

R Reading
W Writing
WOC Written & Oral Conventions
LS Listening & Speaking

Mathematics:

NS Number Sense
AF Algebra & Functions
SDP Statistics, Data Analysis & Probability
MR Mathematical Reasoning
MG Measurement & Geometry
AI Algebra I
G Geometry
AII Algebra II
P&S Probability & Statistics
APP&S Advanced Placement Probability & Statistics
C Calculus

Science:

PH Physics
CH Chemistry
ES Earth Science
I&E Investigation and Experimentation

History-Social Science:

WH World History, Culture and Geography
USH United States History and Geography
AD American Democracy
ECON Economics

Visual and Performing Arts:

APP: Artistic Perception Proficient Level
APA: Artistic Perception Advanced

CEP: Creative Expression Proficient
CEA: Creative Expression Advanced
HCCP: Historical & Cultural Proficient
HCCA: Historical & Cultural Advanced
AVP: Aesthetic Valuing Proficient
AVA: Aesthetic Valuing Advanced
CRP: Connections, Relationships, Proficient
CRA: Connections, Relationships, Advanced

ELA: English-Language Arts with in VPA

ELA- LRA: Literary Response and Analysis
ELA-WSA: Writing Strategies & Applications
ELA-WOELC: Written & Oral English Language Conventions

Sectors

AME Arts, Media and Entertainment
BTC Building Trades and Construction
ECDFS Education, Child Development & Family Services
EU Energy & Utilities
ED Engineering & Design
FID Fashion and Interior Design
FAB Finance and Business
HSMT Health Science & Medical Technology
HTR Hospitality, Tourism & Recreation
IT Information Technology
MPD Manufacturing and Product Development
MSS Marketing, Sales, & Services
PS Public Services
T Transportation