SANTA ROSA CITY SCHOOLS
Excellence is our Common Ground

Santa Rosa City Schools Course Proposal:

Introduction to Agriculture

Proposal Submitted By: Debi Cardozo

Needs Statement: Discuss how this course fits into your Site and/or the District's goals. Attach minutes of meetings where this course was approved at site or district leadership meetings.

Elsie Allen High School is in the process of redesigning existing CTE programs. This course provides students with an overview of the Agriculture and Natural Resources industry sector, so early on, students can make an informed decision regarding which agriculture pathway focus area they want to concentrate on while in high school. This course is also an a-g approved course, which will support providing students greater access to postsecondary options upon graduation.

This course was reviewed and approved by the CTE Department Chairs on Tuesday, February 28, 2023.

Graduation Requirements: Specify which requirement is met.(High School only)

a-g Elective and CTE

UC a-g Requirements: Specify which requirement is met. (High School only)

College-Preparatory Elective (G)

Explain the rationale for course addition or modification. How does this fit in with district/site goals. If this course is replacing a current course, which course is it replacing and why? Will this course require new sections? Be explicit.

This course will serve as an introduction course for an Agriculture program that consists of multiple pathways options. It provides students with an opportunity to learn more about each strand before selecting a pathway focus.

Explain the measurable learning outcomes

Students will be introduced to the multiple strands in the Agriculture and Natural Resources industry sector and be able to explore central concepts and principles of the following topics: career exploration in agriculture, scientific processes, relationships between living organisms and their environment, plant/soil science, and basic agriculture mechanics. They will also be able to apply their learning in real world scenarios, develop reasoning and critical thinking skills when reflecting on their work and others, collaborate on group projects, analyze data, and present to peers, industry, and community partners.

Please see the detailed course design below for detailed learning outcomes.

Course Description (To be used in the course catalog)

This course introduces students to the world of agriculture through the exploration of various industry areas in agriculture. The course emphasizes detailed knowledge of the central concepts and principles of the following topics: career exploration in agriculture, scientific processes, relationships between living organisms and their environment, process of science, plant/soil science, and basic agriculture mechanics. This course will also focus on leadership development, business management through the principles of accounting and computer applications. Students enrolled in this course will also have the opportunity to participate in leadership training activities through FFA and will work with the teacher to develop a supervised agriculture experience project.

Detailed Course Design

(Course design should include the objectives, activities, assessments, and standards to be addressed in this course.)

This course aligns to the CTE Model Curriculum Standards for the Agriculture and Natural Resources industry sector.

California Agriculture

For this section students will research the different leading agriculture commodities for California, analyze the different areas of agriculture production throughout the county, region & state, and compare and contrast the evolving trends and patterns of California's Agriculture industry. California has the most diverse set of agriculture commodities in the U.S. Students will need to learn the reason for such diversity and the economic impact it has on the state as a whole. Students will need to learn about the different areas of growth and production throughout the state and deduce why certain commodities are grown in some areas and not others. Students will also be exposed to the past trends and patterns of agriculture commodities and

be able to hypothesize future trends and directions of the agriculture industry. Students will also discuss current issues facing the California Agriculture industry, including water management, labor shortage, agriculture literacy, GMO vs. Non GMO, etc.

Assignments

Students will be required to turn in a written report on a particular agricultural commodity. The report will need to be researched by the student using resources from the class. This report will include information such as the economic impact of the product, whether it is a leading commodity, the main area of production in the state, and current trend or pattern of the use of that particular commodity. Students will also need to take into consideration factors that may affect patterns or trends, such as water usage or shortage or productivity and hypothesize a future pattern or trend for said commodity. Along with their report students will create a display for their chosen commodity and present their information to the class.

Careers Choices in Agriculture

In this unit students will also have to explore the different types of jobs in the agriculture industry and in every facet of the industry. Students will survey a variety of career and higher education opportunities in the area of agriculture. They will observe how those careers are classified and how they can prepare for those careers. Whether students are headed to a university or an entry-level job, students will utilize various exploration tools to guide students through a crucial self-discovery process and transforms them into self-motivated learners. Students will develop knowledge, skills, and attitudes to successfully examine their own lives, evaluate a wide range of educational options, explore career and life paths, and establish reasoned and researched goals for their future. Students will explore the vital questions of "Who am I?", "What do I want?" & "How do I get it?".

Assignments

Students will explore various career choices in agriculture. Students will also develop an understanding of SMART Goals in education, careers and personal life. Students will watch videos and fill out a questionnaire on the agriculture industry and its different types of jobs. Students will complete a career assessment to understand their interests, personal strengths and weaknesses. Students will utilize the results to develop a plan that aligns with college and career goals. Students will learn how to develop a resume, and compose a business and thank you letter. Students will have the opportunity to attend industry tours, college tours and listen to guest speakers to help encourage
students to develop a particular interest in an area of study, career or education.

Introduction to FFA and Agriculture Leadership

In this unit, students will develop and demonstrate agricultural knowledge and leadership skills through public speaking and hands-on supervised agricultural experiences. Students will explore various leadership opportunities through the Future Farmers of America (FFA) Career Technical Student Organization such as opening/closing teams and public speaking contests. Students will be assessed on how to properly open and close a meeting as a team, run a meeting using proper parliamentary procedure, and recite the national FFA Creed individually in front of the class as well as a panel of judges. In addition, students will practice their public speaking skills with things such as learning how to give a proper handshake, and researching and developing an agriculture issues research paper that must be recited in front of the class. Research and informational debates on the successions and struggles of current agriculturists will be used to interpret the National FFA Creed and agriculture issues. The unit is designed to enhance the students' agricultural knowledge about everyday necessities such as clothing, food, and shelter and develop their public speaking skills.

Assignments

Students will develop an understanding of the historical significance of the California FFA Association. Students will learn and understand the national FFA Creed, read and critically understand the meaning of the creed using multiple resources such as the National FFA Manual, FFA Student Handbook, and FFA.org, and conclude why the modifications were agreed upon. The students will then identify the most recent version of the FFA Creed and compare their current life struggles and the struggles of current agriculturists to those mentioned in the FFA Creed. Each student will utilize their public speaking skills to create a rubric for the National FFA Creed speaking contest and by reciting the 5 paragraph article in front of an audience and a panel of judges concluded by a round of questions from the judges. In groups of 6 students will collaborate to successfully open, run and close a business meeting. Using the FFA Manual students will follow the guidelines outlined by the National FFA for opening and closing the meeting. Students will utilize the Roberts Rules of Order to run a short business meeting during class utilizing parliamentary procedure to accomplish a given task. Students will be judged based on the California FFA Novice Parliamentary Procedure contest score card. Students will also get the opportunity to compete in the FFA Knowledge contest, Opening & Closing Ceremonies Contest and other career development events.

Agriculture Business, Supervised Agriculture Experience(SAE), & Agriculture Education Tracker (AET)

In this unit, students will learn about agricultural business operation and management that include accounting, finance, economics, business organization, marketing, and sales. Students will be able to distinguish among the main characteristics of individual SAE (supervised agricultural experience projects), work

experience, internships, proprietorships, partnerships, corporations, and cooperatives. Students will then collaborate on understanding the stages in making a successful sale and the various techniques used to approach potential customers; then determine the most effective methods for assessing customer needs and wants. Students will be assessed on their ability to keep an accurate record of all income and expenses and compose a portfolio that supports their information.

Assignments
Students will all utilize the AET, an electronic version of the National Agriculture Education FFA Record Book and keep an accurate record of each student's own supervised agriculture experience project. Students will explore various SAEs, work experience, job shadow, and internships in the area of agriculture. Each student will have to complete a calendar of all project events, create an enterprise agreement, and keep an updated journal of all income and expenses throughout the SAE project. Upon completion of the record book, students are eligible to compete in the FFA section record book scoring and the potential proficiency recognition at a state and national level. Conduct a business plan project utilizing an agriculture commodity and/or the new school farm where students will work individually and in teams to review the elements of a business plan, and once prepared, proceed to create a plan for their course project. Students will gain a better understanding of the research and planning required to plan for a new venture. Individual team members will gain different skills (Financial, Marketing, Leadership, etc.) depending on which team they participate with.

Process of Science
In this unit, students will design and conduct a scientific investigation using the scientific model. They will summarize the steps of the process of science for their experiment, and be able to distinguish components of a scientific investigation.

Assignments
Students will use the process of science to determine an agricultural problem/question and design a scientific investigation and then conduct the investigation and detail their observations and conclusions in a lab report. An example opportunity investigation will be comparing feeds for increasing the growth rate of broilers.

Introduction to Plant Science
In this unit, students will be introduced to plant science and how it is applied to the agriculture industry. Students will understand the importance of how the study of plant science affects their daily lives through agriculture, and learn methods for performing scientific tests and experiments on plants. Topics discussed in this unit include: photosynthesis, plant parts, plant reproduction, turgor, plant nutrients and fertilizers, and how plants are used to manage soil. This knowledge will be demonstrated by completion of assignments, experiential learning, and a unit test.

Assignments
Tops to Bottoms- Students are given a variety of food products that represent a different part of the plant. For example, they might be given carrots to represent

roots, and spinach to represent leaves. Students must sort the food into the correct category of seeds, flower, stem, leaves, or roots. Plant Dissection- Practicing safe laboratory techniques, students will form groups and be given three different agricultural crops. Groups will dissect each plant and identify key plant parts and the functions that they perform. Groups will then compare the plant parts and discuss how the plant parts affect the care and growth of the plant. What Do Plants Need to Grow?- Students will be given a puzzle that they must sort onto a grid. The grid components are necessary for plant growth, including water, energy, soil, and carbon dioxide. When students have correctly organized the puzzle pieces into the grid, they can tape the pieces together and flip over the paper to reveal a picture that contains a number of plant related agricultural products. The students must then identify which products are plants or the byproducts of plants. Fertilizer Analysis- Students will form groups and each group assigned a fertilizer commonly used in agriculture. Groups must research the fertilizer to determine what it is commonly used on, and its nitrogen, phosphorus, and potassium content. Students will then perform a chemical analysis to determine if the actual nutrient contents is consistent with the levels advertised. Paper Chromatography- Practicing safe laboratory techniques, students will form groups and perform a chromatography experiment on several different agricultural plant products. Students will then compare the results from the different plants and create a hypothesis for why they have different levels.

Introduction to Animal Husbandry and Management Practices
In this unit, students will evaluate basic animal health, explore animal anatomy and analyze animal agriculture's effect on the environment. Students will state the names, find the locations and explain the external anatomy and major functions of vertebrate systems of livestock animals. They will also be able to assess the appearance and behavior of a healthy animal and explain the ways in which housing, sanitation, and nutrition influence animal health and behavior. Students will be assessed on their ability to differentiate an animal's health based on their current living conditions as well as their appearance. Students will be able to properly handle livestock per industry standards.

Assignments
Breed identification PowerPoint: In groups, students will research and prepare a PowerPoint presentation on the top 5 breeds identified in a livestock species. Students will include a picture of the breed, size of the breed, identification tools, and address production uses and proper housing, sanitation, and nutrition needed that will influence animal health and behavior. Presentations will be given to the class by each subgroup covering swine, sheep, goat, cattle, rabbits, ducks and chickens.

Introduction to Soil Science
In this unit students will learn the importance of soil in agriculture and be introduced to the study of soil science. Students will use the methods of scientific inquiry to investigate the composition of the physical world, and discover how matter and energy change forms through biogeochemical cycles. This unit will focus on geomorphology as it relates to soil formation and management practices. Students will understand where soil originates by investigating the role of the rock

cycle in soil formation, sea floor spreading, volcanic activity, and mountain building. Students will identify how the climate, weather, natural resources and hazards, and environment impact the soil properties, and will examine the role erosion plays in soil science as influenced by human activity. Students will collect soil samples from a variety of sources, and will use industry methods to determine the chemical composition of the soil and how this composition affects its physical and chemical characteristics. Students will connect to prior knowledge of life science by looking at how biotic factors impact soil type, composition and texture through investigation and experimentation.

Assignments

Soil Walk- As a class, the students will walk around the school campus and school farm in order to identify a variety of soil formations and potential issues. Students will look for different textured and colored soil, evidence of things such as hardpan, evidence of erosion, and soil factors that may affect the use of the land. What's in My Yard?- In this lab, students will collect a soil sample from their yard or area in which they live in order to test the physical characteristics of soil. After receiving instruction in lab safety protocols, students will choose appropriate lab testing and safety equipment, and will carry out a variety of industry standard tests to determine what physical and biological characteristics the soil samples possess. After receiving instruction in what physical properties of matter are measured in soil testing, students will use the ribbon test, and also look at physical factors such as soil texture, composition, and particle size. Students will examine the soil for the presence of living organisms, such as nematodes. Based on these properties, students will hypothesize what chemical elements are present in the soil. Students will research what chemicals are prominent in the soil in their test areas, and check their hypotheses against this research.

Introduction to Ecology and Natural Resources

In this unit, students will learn how ecology and natural resources affect agriculture, and how agricultural production affects ecological systems and natural resources. Topics discussed include: what is ecology, parts of an ecosystem, water cycle, nitrogen cycle, and agricultural issues involving wildlife management and water and air pollution. This knowledge will be demonstrated by completion of assignments, experiential learning, and a unit test.

Assignments

What's in an Ecosystem- Students will create a model of an assigned ecosystem that includes information on the climate of the ecosystem, the types of species present in the ecosystem, and an example of a food chain. Hydroponics in a Jar- Students will understand how the relationship between plants and animals can be mutually beneficial by creating a hydroponics system using a mason jar. Issues Debate- The class will be assigned a current agricultural issue that is present in their county for them to research. For example, the class may choose to research water usage and conservation. Each student will create a minimum of 5 arguments for how production agriculture negatively impacts the issue, and 5 arguments for how production agriculture positively contributes to the issue. The students will then be randomly assigned to be for or against production agriculture, and the class will hold a professional debate.

Introduction to Agriculture Mechanics Shop Safety
In this unit the students will learn to recognize major work areas and use safe procedures when working in an agricultural mechanics shop. Students will also learn to interpret safety colors and codes,identify tools, and protect the body against injury, and work safely in agricultural mechanics settings. Students will become aware of and recognize and reduce hazards in agricultural mechanics settings, and to react effectively in case of fire or other emergencies. This knowledge will be demonstrated by completion of assignments, experiential learning, and a unit test.

Assignments

Equipment Check and Awareness of Environment - Four different scenarios will be set-up in the classroom shop. Each scenario will provide a work environment, tools, and project to be done. Students will observe the scene and read the script regarding the project to be completed. Students must determine if all safety materials are present and complete a tool/machine safety check. If items needed are missing from the scene students have to make recommendations about how the scene could be improved. Once complete the students will come up with a protocol to safely and effectively complete the scenario's task. Findings will be shared with the class. Critical Thinking: Logic Chains - Students develop their reasoning ability by first writing hypotheses and conclusions regarding shop and tool safety. They'll further develop their use of logic by creating logical-chains as used in geometric proofs, describing the cause-and-effect of following the rule (or not following the rule) as preparation for their general shop safety and machine tool safety tests. One hundred percent accuracy is mandatory on all safety tests.

Budget- budget figures must be included even if they are an estimate.

Projected Costs	Start-up	Ongoing
Personnel (Not to include classroom instructor unless a new section is needed)		
Instructional Material Supplies per student (textbooks, software, etc.)	Agriscience: Fundamentals and applications text, instructional materials	Instructional materials
Services (training, equipment maintenance, contracts, etc.)		
Capital Outlay (remodeling, technology, etc.)		
Total Projected Costs	$8000	$6000

Instructional Materials- must include estimate for new materials even if none have been selected. Place in chart above.

Type	Publisher	Title	ISBN	Author	Copyright	# Have/Need
Textbook	Delmar, Cengage Learning	Agriscience: Fundamentals and applications	9781133 686880	L. DeVere Burton	2015	Need - 33

Funding Source(s) for Costs and Instructional Materials

Grants (indicate **specific** grant and grant timeline)	American Rescue Plan Act - CTE Foundation Grant, ends December 2024.
Categorical Funds (include related **programs**)	
Career Technical **Education** (must be for an **approved** CTE course)	Agricultural Incentive Grant, Perkins V Grant, Career Technical Education Grant (annual)
Department Funds	
Other (be specific)	

Appendix of Additional Documents

Required additional documents include meeting minutes where the course was discussed and approved
This course was reviewed and approved by the CTE Department Chairs on Tuesday, February 28, 2023.

District Principal Review and Approvals:

Principal's Signatures	Site	Approved / Not Approved
	KHS	Approved
	SAHS	Approved

	MHS	Approved
	EAHS	Approved
	PHS	Approved

District Department Chair Review and Approvals:

Department Chair Signatures	Site	Approved / Not Approved
Bao Alderson	MHS	Approved
Cara M Parlato	EAHS	Approved
Colleen Spiers	MCHS	Approved
Tom Gutsch	SRHS	Approved
Maureen McCabe	PHS	Approved